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AUTHOR Berg, Barbro; Ostergren, Bertil
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ABSTRACT

Included in this report are seven comparative case studies of innovation processes in higher education in Sweden. The purpose of the study is to chart dysfunctions in the system in planning for change, and also to gain more knowledge of the organization by studying it when it has been "disturbed" through introduction of an innovative process. The case studies involve: (1) undergraduate art at the University of Lund; (2) eastern European studies at the University of Uppsala; (3) a proposal for a new curriculum plan in civics; (4) an environmental studies program at the University of Lund; (5) architecture at Chalmers Technological Institute; (6) systematic anatomy at the Carcline Institute of Medicine; and (7) instructional television at the School of Technology in Linkoping. The processes are analyzed, theories discussed, and change strategies examined; Background information on the Swedish system of higher education is given.

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INFORMATION ON HIGHER EDUCATION IN SWEDEN

Innovations and Innovation Processes in Higher Education

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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BARBRO BERG
and
BERTIL ÖSTERGREN

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Foreword

This book is a translation into English of the third report of a function study of educational planning, conducted 1974–77 within the Office of the Chancellor of the Swedish Universities (from 1976 reorganized as the National Board of Universities and Colleges in Sweden, NBUC). The translation contains the complete text of the report, and, in addition, this foreword as well as an introductory section describing the main organizational characteristics of higher education in Sweden.

The study in its entirety can be regarded as a clinical examination, oriented towards the charting of dysfunctions in governance, planning, and organization of higher education, with primary emphasis on two criteria, namely effectiveness and innovation capability. The first report (May 1975) treated fundamental problems and principles; the second one (September 1975) focused on problems on central and regional levels. A summary in English of these two reports is available under the title Planning for Change in Higher Education (Office of the Chancellor 1975).

The third report as well as the fourth and last one were published in Swedish in the spring of 1977. The fourth report is a final overview combined with recommendations for action. A short summary in English of all four publications, emphasizing the final report, appears in "R & D for Higher Education", No. 12 1977 (NBUC 1977).

The study has been conducted by Bertil Östergren, adviser to the NBUC, with Torsten Kälvemark, head of section at NBUC, as co-worker for reports No. 1 and 2, and Barbro Berg, head of section at NBUC, for reports No. 3 and 4.

Introduction to the English version

Organization of Higher Education in Sweden

Included in this report are seven comparative case studies of innovation processes in higher education. In order to understand the case studies, it is necessary to have a general insight regarding the organizational structure within which the processes take place. The fundamental elements of higher education systems are quite similar in various countries, and the discussion of principles and theory should therefore be generally relevant. However, the understanding of the individual case studies will be facilitated by familiarity with the specific characteristics of the Swedish organization.[1]

The departments

The basic unit of a university or professional school is generally the *department*, which conducts its activities within the framework of a scientific discipline. In certain cases, there are also inter-disciplinary departments or centers.

Generally, the department is headed by a *department board*, where teachers, non-teaching staff, and students are represented. The executive leadership is in the hands of a *department chairman*. In certain cases, an older system has been retained, according to which there is no department board, but the department chairman is the decision-maker after consultation with an advisory body, consisting of all teachers within the department and two student representatives.

The department chairman is generally aided by a *director of studies*, a teacher with responsibility for planning and administration of undergraduate education.

Certain teacher categories are mainly involved with research and graduate education, namely full professors, associate professors, and assistant professors. Another group devotes itself mainly to undergraduate education, namely lecturers and assistant lecturers. In addition, there are various types of assistants, frequently graduate students.

Most departments conduct research, graduate education, and undergraduate education. Undergraduate education is organized in *courses*, the length of which is indicated by a point number, where one point corresponds to a normal study period of one week. A one semester course gives 20 points; an academic year consists of two semesters. Within some faculties the first 20 points are called the A level, the next 20 the B level etc. A course is usually

[1] A major reform of higher education in Sweden went into effect on July 1, 1977. Inherent in this reform were certain organizational changes as well as inclusion in the higher education system of a number of institutions previously not regarded as parts of it, e.g. schools of education, schools of social work, and nursing schools. However, since our studies have been conducted prior to the reform, the description applies to the previous organization. The main characteristics of the organization relevant to the case studies have not been affected by the reform.

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divided into various sub-courses with certain point values. The combination of courses makes up an *educational program* leading to a degree, but in certain areas (notably humanities, social sciences, and natural sciences) courses may also be taken independently, i.e. not necessarily as part of a specific educational program.

The courses adhere to central guidelines established by the Office of the Chancellor of the Swedish Universities (see below), e.g. as so called *central curriculum plans*. These are then implemented in detail as *local curriculum plans*, established by educational program committees.

Inter-disciplinary centers may be differently structured than the single discipline departments.

School or faculty level

A group of departments within related disciplines forms a *faculty*. (We use the term 'faculty' in the European sense of the word, i.e. corresponding to the school or college in an American university, not as a denomination for the group of teachers and researchers.) A faculty may be divided into sections; thus, for instance, the humanities faculty is usually divided into a historical section and a linguistic section. The *dean* serves as chairman of the faculty or section. Questions regarding educational matters are settled not by a general faculty meeting, nor by a specific faculty committee, but through an *educational program committee* consisting of representatives for teachers, students, and non-teaching staff. The dean may serve as chairman of this committee, but another person may also be appointed to this function. The executive officer of the educational program committee is a *director of education*, usually a former teacher who has been appointed as full time administrator.

The institutions

An institution may be either a *university* with several faculties, or a *professional school* with one or two faculties or a number of sections. Medical and technical education may thus either be included as a faculty in a university or form a separate professional school.

An institution is headed by a *rector*, assisted by an *administrative director* who is responsible for the administration of the institution. The *Rector's Office* makes decisions regarding day to day concerns through the rector in cooperation with the administrative director, or by delegation. The above mentioned directors of education are members of the common administration of the institution. To this also belongs an educational development unit.

The highest decision-making body of an institution is the *konsistorium* or *university board*, consisting of the rector (as chairman), the deputy rector, administrative director, deans, and representatives for teachers, students, and non-teaching staff.

The Office of the Chancellor of the Swedish Universities (UKÄ)

The *Office of the Chancellor of the Swedish Universities* (predecessor of the National Board of Universities and Colleges) is a national authority for higher education and research. In other countries, the corresponding authority is usually vested in the Ministry of Education. Among the departments of the Office was a Department of Education, a Department of Planning and a R & D Department.

Ministry of Education

The *Ministry of Education* (or, formally, the Government) establishes the budgets for various disciplines, the existence of institutions, etc.

Parliament

Parliament decides on the funding for higher education and research as well as on the number and nature of professorships in the system.

It should be noted that the higher education reform of 1977 has caused certain changes in relation to the above description, e.g. a decentralization of decision making.

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Part I
Case studies of innovation processes

1 Introduction

1.1 Rationale for the case studies

The case studies of innovation processes which will be presented in the following have been conducted in accordance with the general guidelines of our assignment. The functional study in its entirety can be characterized as a clinical examination of governance, planning systems, and innovativeness in higher education. The purpose is to chart dysfunctions in the system as related to planning for change.

Resting in relative balance, any system appears static and formalized as in an organization chart, in a law text, or in an official investigation report. But when a disturbance is introduced into the system—and an innovation is frequently a disturbance—a dynamic force field emerges; life and reality enter the system. One can then observe interactions between formal and informal subsystems, interactions which bear no correlation to the world of organization charts, legal texts, or official presentations. Our knowledge of higher education then takes on a realism that can at times be unpleasant. Just as there is a 'hidden curriculum',[1] there is a 'hidden governance system', a 'private life of higher education'[2] which can be traced under the superstructure of formal organizations and regulations.

One of the purposes of the case studies has been to gain more thorough knowledge of the organization as such by studying it when it has been 'disturbed' through an innovation process. The other purpose has been to deepen our understanding of the conditions for change in higher education.

In the area of innovation studies, theory and activity orientation have gone hand in hand; studies with theoretical ambitions have frequently resulted in advice to corporate managers and others. The international literature in the field has grown relatively rich, and there are different types of theory formulation regarding innovation in general as well as regarding innovation specifically in education. However, studies of innovation processes have been conducted mainly within organizations outside of the educational systems (e.g. corporations), and those conducted within the educational field have dealt mainly with the primary and secondary levels. Case studies of innovation processes in higher education are rare, and in addition, they are generally so constructed that they are not suitable as a basis for theory formulation.

As far as we know there does not exist, for higher education, a series of comparative case studies conducted in such a systematized way as we have attempted. Either one has started from an isolated case, or else, one has tried to build generalized conclusions on case studies made by different persons, frequently the innovators themselves, and also differently structured. For us, the main concern was to build on a comparative basis, and we believe that we have created such a comparative basis by conducting the case studies according to uniform principles and analyzing them from uniform theoretical starting

[1] The expression from Benson R. Snyder: *The Hidden Curriculum*, New York, 1971.

[2] The expression from Martin Trow: *The Public and Private Lives of Higher Education*, in *Daedalus*, Winter 1975, Cambridge, Mass., 1975.

points, with the aid of a systematically constructed conceptual apparatus.

The empirical basis for an innovation theory in higher education is, mildly said, frugile. Thus, even simple investigations should have a certain theoretical value, provided they have been systematically conducted—in which case they should also have a practical value. Empirism - theory - strategy are natural stages in innovation research.

In research and development work concerning higher education, there are two trends which we consider to be of special interest. One is R & D work on higher education as an organization in the widest meaning of the word (management, institutional organization, structure of positions, recruiting policy, etc.). The other is research on and development of the qualitative contents of education and the educational situation as a whole. In both cases, the work can be conducted with a critical, questioning attitude towards established value norms, institutional forms, and current goal concepts. The function study in its entirety as well as the case studies will tie in with both of these trends in R & D on higher education.

1.2 Theoretical and methodological principles

In our definition, an innovation process is the development of a change in its social setting, from the moment when preconditions for an innovation have emerged until the innovation in question has either become institutionalized or rejected.

Our starting point was an attempt to focus the case studies on important elements of the innovation process. In addition, we also wanted to approach the analysis of these important elements directly, without a "wall to wall" data presentation. We are not convinced that this is a methodologically inferior approach. Anyhow, we are convinced that it was necessary in our situation. Otherwise, one single case study would have required the same amount of resources and page space as this entire report.

There are at least three different techniques of studying an innovation process. One is to continuously observe the ongoing process. Another is to participate actively in order to influence it (action research). The third one is to study the innovation process afterwards.

In this respect, we had no choice, since our time frame eliminated the first two techniques. All three methods have their pros and cons; we wish to point out one definite advantage of the one we were forced to adopt, namely that the innovation process itself was not disturbed by our studies.

1.2.1 Kurt Lewin and the field theory

Our theoretical basis can be described as a systems approach oriented towards social psychology and particulary influenced by the works of Kurt Lewin (1890–1947).[1] We have found his fundamental principles for analysis and explanation of change processes to be a rewarding starting point for our efforts.

[1] Kurt Lewin: *Field Theory in Social Science*, New York, 1951, and Kurt Lewin: *Resolving Social Conflicts*, New York, 1948. A strong influence from Lewin can also be found in some of the essays in W. Bennis, K. Benne, and R. Chin (ed.): *The Planning of Change*, New York, 1969, and in M. Miles (ed.): *Innovation in Education*, New York, 1964. In their work, *Managing Academic Change*, S. v. Martorana and Eileen Kuhns base their theory on Lewin. A summary of Lewin's field theory from the point of view of learning psychology has been most useful to us, namely Steen Høyrup Pedersen's *Socialpsykologiske ændringsteorier* [Change Theories in Social Psychology], Copenhagen, 1970 (mimeographed). Discussions of systems approach, frequently from other starting points than that of Lewin, are, for instance, F.E. Emery (ed.): *Systems Thinking*, Hammondsworth, 1969, and W. Buckley: *Sociology and Modern Systems Theory*, Englewood Cliffs, 1967.

Lewin's works offer the foundation of a systems approach.[4] His field theory implies, for instance, that a sequence of events can be explained on grounds of currently valid motives which determine the positions and relations of different systems (or individuals) to each other, and of the interaction between systems (or individuals). The field theory is, as Lewin himself writes, above all a way of analyzing causal relations and of building up a conceptual apparatus that explains the conditions for change.[5]

"What is important in field theory is the way the analysis proceeds. Instead of picking out one or another isolated element within a situation, the importance of which cannot be judged without consideration of the situation as a whole, field theory finds it advantageous, as a rule, to start with a characterization of the situation as a whole. After this first approximation, the various aspects and parts of the situation undergo a more and more specific and detailed analysis."[6] Instead of using classificatory concepts, Lewin works with 'dynamic constructs' indicating different kinds of relations and dependencies: "To my mind, it is hopeless to link the different problems involved in social psychology in a proper manner by using classificatory concepts of the type of the Linnean system in botany. Instead, social psychology will have to use a framework of 'constructs'. These constructs do not express 'pheno-typical' similarities, but so-called 'types of influences'. In other words, these constructs represent certain types of interdependence. The transition from phenotypical concepts to dynamic (genetic, conditional - reactive) constructs based on interdependence is, to my mind, one of the most important prerequisites for any science which wishes to answer questions of causation."[7] Throughout, personal behavior is regarded as dependent on the current position of the individual in the social force field (we use the expression 'system position'), and social changes are regarded as predetermined by this field as a whole.

Lewin has had great importance for many different categories of research and development. Still, one must ask why his influence has not been even greater. Two explanations lie close at hand. One is the dominance of behaviorism in the 1950's and 60's; the other is that the systems approach has been all but monopolized by the biologically oriented school of Bertalanffy (General Systems Theory).[8]

Lewin's systems approach is based in gestalt psychology and social psychology. His concept of systems or social fields can be illustrated by some quotes: "Whether or not a certain type of behavior occurs depends not on the presence or absence of one fact or of a number of facts as viewed in isolation but upon the constellation (structure and forces) of the specific field as a whole. The 'meaning' of a single fact depends upon its position in the field; or to say the same in more dynamic terms, the different parts of a field are mutually interdependent."[9] "In the social sciences it has usually been not the part but the whole, whose existence has been doubted. - - - There is no more magic behind the fact that groups have properties of their own, which are different from the properties of their subgroups or their individual members, than behind the fact

[4] Lewin was also a pioneer in the fields of action research, organizational development, and group dynamics.

[5] Lewin, 1951, p. 45.

[6] Lewin, 1951, p. 63.

[7] Lewin, 1951, p. 145.

[8] There are other explanations as well, e.g. discipline structure and the rewards system in academic research. See Morton Deutsch: *On Making Social Psychology More Useful*, Social Science Research Council Items, Vol. 30, No. 1, New York, 1976.

[9] Lewin, 1951, pp 149–150.

that molecules have properties which are different from the properties of the atoms or ions of which they are composed."[10] "The basic tool for the analysis of group life is the representation of the group and its setting as a 'social field'. This means that the social happening is viewed as occurring in, and being the result of, a totality of coexisting social entities, such as groups, subgroups, members barriers, channels of communication, etc. One of the fundamental characteristics of this field is the relative position of the entities, which are parts of the field. This relative position represents the structure of the group and its ecological setting. It expresses also the basic possibilities of locomotion within the field. – What happens within such a field depends upon the distribution of forces throughout the field."[11]

Our dependence on Lewin does not mean that we have adopted a total and complete theory—which would have been impossible, since his thinking was in constant development, ranging from individual psychology to social psychology, and since he never compressed his theories in one single, definite volume. We have adopted certain elements from Lewin; in other respects, we have modified his concepts and methods of analysis; in some cases, we have not found them productive for our purposes, and in several cases, we have probably made insufficient use of Lewin due to lack of knowledge or ability. To a great extent, our analysis technique and our theoretical approaches are independent of Lewin.

Of greatest importance to us has been the attitude of Kurt Lewin to the investigation of social reality and to the relation between insight and action. Above all, he has been a constant source of inspiration in our work.

1.2.2 The illuminative method

Inherent in case studies is what may be called an illuminative method.[12] (Naturally, we could have used a different terminology and tied in with other, similar development trends in social research.) One aspect of this particular methodological approach is that emphasis is placed on 'illumination' rather than 'measurement', on observation and analysis of the process in its entirety and in its own social environment rather than on collection and classification of data concerning certain selected variables. The effort at an illuminative methodology has been referred to as a 'social antropological' paradigm as opposed to an 'agricultural - botanical' one. However, while the effort at an illuminative methodology has hitherto been described as a technique for evaluation of innovations, we have applied its main principles to the study of the innovation process itself. It is obvious that there are connections between the thinking of Lewin and an illuminative method.

Our source material consists partly of documentation from the innovation process, partly of non-structured interviews with key participants.

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[10] Lewin, 1951, pp. 191–192.

[11] Lewin, 1951, pp 200–201.

[12] The expression from Martin Trow: *Methodological Problems in the Evaluation of Innovation*, in M.C. Wittrock and D.E. Wiley (ed.) *The Evaluation of Instruction*, New York, 1970. The effort at illuminative methodology has been further developed in M. Partlett and D. Hamilton: *Evaluation as Illumination: A New Approach to the Study of Innovatory Programs*, Center for Research in the Educational Sciences, University of Edinburgh, 1972. *Cf* Benjamin R. Barber: *Science, Salience and Comparative Education: Some Reflections on Social Scientific Enquiry*, in *Relevant Methods in Comparative Education*, Unesco Institute of Education, Hamburg, 1973, as well as Tom Kitwood: *Educational Research and its Standing as Science*, Studies in Higher Education, Vol. 1, No. 1, Oxford, 1976. Richard Normann presents an interesting discussion from a general social science standpoint on the methodological problems we touch upon, namely in *På spaning efter en metodologi* [In Search of a Methodology], SIAR, Stockholm, 1976.

The advantage of case studies is that they make it possible to reach the core of the multidimensional and multifaceted reality reflected in an innovation process—in a way not possible through classification and statistical treatment of variables. The disadvantage is that though reality can be illuminated, it cannot be evidentially proven that the illumination is the only true image of this reality. It is especially in the presentation of results that the illuminative method encounters problems; however, since it is not enough that the investigators themselves feel that they have gained more knowledge and insight, a presentation must be produced, whatever weaknesses it may have.

The lack of quantitative data and exact measurements may seem as a limitation of our investigation. However, we are dealing with an area where relevant quantitative-empirical methods have not been sufficiently developed; if we had limited ourselves to such methods, the amount of relevant information would be less than our less structured method has allowed. We would like to refer to a quote from Kurt Lewin, who was known for his requirements on stringent definitions of concepts as well as for his mathematical and geometrical models in psychology:

> "In other words, to find out what one would like to know one should, in some way or other, already know it. What should science do to resolve this paradox? If it is wise, it follows the same procedure used in systematic exploration of the resources of a new land: small paths are pushed out through the unknown; with simple and primitive instruments, measurements are made; much is left to assumption and to lucky intuition. Slowly certain paths are widened; guess and luck are gradually replaced by experience and systematic exploration with more elaborate instruments."[13]

A specific difficulty in presenting our results has been created through the personal dimension of the intimate insights that we have gained into the function of the organization and the conditions for its development. At the same time as we have tried to give an open and complete description, we have also tried to avoid writing anything that could seem unnecessarily personally insulting or be regarded as illegitimate snooping. It cannot be denied that this tightrope walking has been difficult. We have achieved a formal anonymization by using the initials A, B, C, or job titles instead of identifying persons. Though it is not difficult for the initiated to identify the persons, this was our way of emphasizing that we have desired an analysis of the systems, not the persons involved.

In innovation studies, it is easy to present the pro-innovation forces as positive and the anti-innovation forces as negative. However, innovation per se is not by definition good or desirable, and, as we said above, it has not been our intention to evaluate persons. It is also a wellknown fact that individuals or groups who work in favor of one innovation may oppose another. Our work method has been based on not studying the personal qualities but focusing on those conditions within the system that determine the attitude towards innovation.[14] Still, it cannot be denied that we generally regard a high degree of

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[13] Lewin, 1951, p. 3. *Cf* Normann, pp 50–51: "The serious weakness of traditional research methods (to formulate hypotheses and then test them) is that there is very little to be truly learned during the process—actually, already in the formulation of the hypotheses one must know in advance what one wants to learn."

[14] "Resistance to change does not come from the stupidity or venality of individuals within the system; it is a function of the system itself." Donald A. Schon: *Beyond the Stable State*, London, 1971, p. 48.

openness to change and of ability to innovate as desirable elements in the higher education system, nor that we have come to appreciate the innovators, since truly outstanding performance is required of them and since their role is a difficult one indeed. These and other biases might have influenced details in the case reports.

Generally, our case studies and our method must be judged for what they are and with consideration of the fact that our time has been strictly limited. The study must be seen as an experiment; it is a fishing net of ideas and methods that we have thrown out in the hope that something would be caught in it.

1.3 Implementation

The seven innovation cases have been subjectively selected. However, we believe that they have not been chosen in order to support certain hypotheses or theories. Rather, we have attempted to select them so that they would represent different types of innovation processes (in relation to the frames of reference that we could have had in advance) and so that they illuminate the conditions for the change in relation to governance system and social structure. It could perhaps be said that we have attempted to select cases we found both interesting and diversified. But in the diversity, there are also similarities between our cases: they refer to fundamental educational contents or educational methods, even if they may also present various aspects of governance, organization, and technology. There are other similarities as well, namely that they (at least partially) may be called deep-structural, extraparadigmatic, and system-divergent innovations.

In the first report of the function study, we used the terms surface-structural and deep-structural innovations. To the first category we referred changes in administration, new courses and educational materials of conventional type; while deep-structural innovations meant new types of courses and learning situations, new orientation of studies, etc.[15] Another categorization differentiates between innovations that mean changes within the framework of what is traditionally and socially accepted, as opposed to changes which mean a breach of conventions. The terms paradigmatic and extraparadigmatic innovations are used for categorization purposes.[16] Another starting point could be the degree of effect: "An innovation that has little disruptive impact on behavior patterns is called a continuous innovation and constitutes only slight alteration of current practice. Next are those innovations, dynamically continuous, that have moderate effect on behavior patterns. Finally, there are discontinuous innovations that involve the establishment of new behavior patterns."[17]

Since we strive to apply a systems approach, it is natural that we differentiate between innovations that are consistent with or divergent from existing systems. In our opinion a system can be mainly characterized through its membership composition, its ideology (goal and function conceptions), technology, organizational structure, and relations with the environment. An innovation divergent from the system would mean essential divergence from

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[15] Report from the Office of the Chancellor, 1975:4, p. 20.

[16] R. Danforth Ross: *The Institutionalization of Academic Innovations: Two Models.* Sociology of Education, Vol. 49, April 1976.

[17] T. Robertson: *Innovative Behavior and Communication*, New York, 1971, quoted by Staffan Gran in *Innovationshinder inom universitetsorganisationen* [Restraints on Innovations within the University Organization], University of Gothenburg, 1977 (mimeographed).

(or even a threat to) membership interests, ideology, technology, structure and relations to the environment.

The concepts deep-structural, extraparadigmatic, discontinous, and system-divergent are closely related to each other.

The innovation cases we have selected are oriented primarily towards contents and methods of education, and they are at least partially system-divergent. There are several reasons for this selection. We wanted to study organizations under influence of a disturbance—thus we had to select system-divergent innovations. Further, there is a clearly recognizable process inherent in the system-divergent innovations due to their discontinuous character; it is possible to delineate, describe, and analyze them with limited resources. And finally, we believe that system-divergent innovations have a specific interest: at the same time as they give us some indications of the ability of a higher education system to change itself, the urgency of such innovations will become increasingly apparent, according to our view.

Naturally, we have selected cases that have been clearly visible to us, which means that we have been limited by our own system positions—and the selection is probably not independent of the value norms inherent in these system positions. Afterwards, we ask ourselves if we could not have selected our cases totally at random within the abovementioned framework, i.e. system-divergent and oriented towards contents and method of education—and still have obtained the same results. As previously emphasized, the comparative aspect has been essential to us. Thus, we had to select at least two cases. The fact that we ended up with seven may be explained through our preconceptions of the number of cases that would be necessary in order to discern a pattern, our efforts to find different types of processes, and our possibility to actually master a certain number of cases.

In two of the cases, one of us has previously been actively involved, namely Östergren in the capacity of chairman of the Committee for Internationalizing University Education. The cases are Eastern European Studies and Civics. This fact has been both an advantage and a disadvantage.[18]

Interviews and document studies have taken place during different periods from November 1975 through February 1976, and from November 1976 through January 1977. In each case, one to three days were devoted to the interviews.

All persons interviewed have read the manuscript of the description and analysis of the cases and have been given an opportunity to comment. But nobody but ourselves is responsible for the account.

The presentation of the case studies has been planned in the following manner. After this introduction, we present the model we have used for description and analysis of the various cases. The seven case studies follow in chapter 3. In chapter 4, we make a comprehensive analysis of the innovation processes. Chapter 5 places our empirical results in a theoretical framework, and chapter 6, finally, discusses change strategies in higher education against this background.

[18] "From a research point of view, such intensive participation in the field implies the advantage of firsthand knowledge of what goes on behind at least one part of the scenes, but, of course, it also definitely means a partisan point of view with the chance of various biases in the description and interpretation of events." (Cornelis J. Lammers: *Localism, Cosmopolitanism and Faculty Response*, Sociology of Education, Winter 1974, p. 130.) In the study of an innovation process, the dangers seem somewhat less serious than in the evaluation of an innovation. Some of the risk should also have been eliminated due to the fact that one of us has not been actively involved in any one of the cases and that persons who were involved in various roles have been given the opportunity to read and comment on the manuscript. The greatest risk is probably not in the personal bias that Lammers points out but in the fact that the persons we interviewed have known that one of us has been active in the process (even if this also has the opposite aspect).

2 Model for description and analysis of innovation processes

We have selected a uniform model for description and analysis of all cases, and we have followed the steps outlined below for each one of them.

(1) Introduction

The introduction briefly describes the general character of the innovation, and the reasons for selecting the specific case are given.

(2) Base situation

We present the educational situation before the innovation and the conditions that created an experience of need for change.

(3) Description of the innovation

The description of form and contents of the innovation includes as much detail as is necessary for understanding the development of the innovation process.

(4) General description of the sequence of events

The chronological description is focused on the main characteristics of the series of events. We have especially concentrated our report on the critical points in the development, i.e. events that have been of major importance for the course of the innovation.

(5) Analysis of the innovation process

We have attempted to analyze the different processes with references to Lewin's way of thinking. Thus, we first want to analyze the situation as a whole. We do this by describing the interaction between systems. Next, we want to identify certain important features of the innovation process, and we do this by means of a type of 'dynamic constructs' according to Lewin's idea (even though the constructs themselves are generally not taken from Lewin). We have divided these constructs into two groups: descriptive categories for internal and external relations, and analysis categories for the decisive factors of the innovation process. Naturally, we have not been able to include all important types of relations and factors in this scheme, but we have emphasized those that—on the basis of our case studies—have seemed most suitable to explain the innovation process.

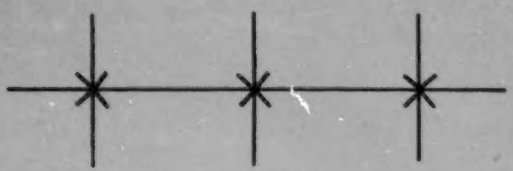
(5.1) Interaction between systems

In some of the innovation literature as well as in the interviews we have conducted, the importance of individual psychological facts for the innovation process has been strongly emphasized. The process is seen as an interplay between different actors, and it is regarded as being most of all influenced by the characteristics, motives, and actions of the individual participants. Naturally, these factors are influential.

But our case studies have led us to the opinion that an innovation process is first and foremost determined by the interaction between social systems. The interests and positions of the systems essentially determine the needs, positions, and actions of individual participants.

Thus, one can say that the innovation process has a systemic character.[1] This character can be determined by defining which systems have been involved and what the interaction between them has been. We do this both graphically and by discussing the role distribution between the subsystems.

Kurt Lewin analyzes change problems by determining the influence of various forces on what he calls a quasi-stationary equilibrium.[2] This can be schematically illustrated with the following model:



For Lewin, 'force' is a tendency to movement, a tendency to change. We let the arrows identify the forces exercised by certain subsystems. This is a consequence of our systems view.

The arrows are vectors, i.e. mathematical symbols that not only show quantity but also direction. To illustrate the quantity, we have limited ourselves to three units, indicating very great effect, moderate effect, and little effect. Evidently, these are only approximate estimates of the influences from various systems. We have also limited ourselves to two directions in the graphical presentation: pro-innovation, i.e. 'driving force' according to Lewin (upward), and anti-innovation, i.e. 'restraining force' (downward).

A change of the equilibrium in a certain direction requires an increase of the force on one side or a decrease in force on the other side.

The force field can be illustrated for different phases in the innovation process, but one can also attempt to make a synthesis over time of the effects of different important subsystems. In most cases we do both.

(5.2) Characteristics of the innovation process

It is important to describe the emergence of the nine 'dynamic constructs' that we have used.

Before starting the case studies, we had listed a great number of hypothetical variables and other concepts, the utility of which we wanted to

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[1] The expression is taken from P. Dalin and M. McLaughlin: *Strategies for Innovation in Higher Education*, in N. Entwistle (ed.): *Strategies for Research and Development in Higher Education*, Council of Europe, Amsterdam, 1976.

[2] For a descriptive summary, see Kenneth B. Benne and Max Birnbaum: *Principles of Changing*, in Bennis, Benne, and Chin, pp 328–330.

test through the case studies. These were based on our study of existing literature in the field. After a period of active field work, we could revise this list, mainly by eliminating many concepts and reformulating others in the direction of Lewin's types of constructs. After more field work, a new revision could take place, still basically by decreasing the number of constructs and consolidating them to more strictly delineated and less overlapping concepts. The last revisions, still in the same direction, were made after completion of the field work, during the time our manuscript was worked out.

One type of concept that is frequently used in the innovation literature designates various individual roles. Such terms are 'change agent' and 'gate keeper' (the latter is one of Lewin's concepts). Typical for this proliferation of concepts is that they frequently overlap, that they may be determined from different starting points, and that frequently, they are not related. In the cases we have studied, we have not found concepts like 'change agent' or 'gate keeper' to be consistently appropriate as designations of individual roles. Thus, we have eliminated concepts of this nature. We have found that it is possible to give relevant individual roles a systematic and systemic structure by grouping them under the concept of leadership, whereby we distinguish different types of leadership roles, which will be discussed later.

Nor have we utilized certain concepts that may basically characterize the innovation per se but have also been regarded as important to explain the innovation process. Examples of such concepts are 'centrality' and 'complexity'. Relatively early, we gave up the attempts to use such concepts as instruments for analysis. We found that they did not usefully contribute to explaining the processes, and that they were difficult to define.[3]

At first, we imagined that we would be able to localize certain types of barriers on innovations and to chart incitements and anti-incitements. We abandoned the 'barriers thinking' partly because of our approach, according to which the system itself is the obstacle, partly also because we found that we could analyze the barriers as well as the incitements under the concept pair gain/loss.

Many of the concepts that have been eliminated in the testing against our cases were tied in with the image of the innovation process as one of dissemination or information. This central problem will be treated in the theory discussion in chapter 5.

During the investigation, we have thus gone through several stages in order to finally arrive at a limited number of constructs that—in conjunction with our analysis of the interaction between systems—are particularly suitable both for the description of the innovation processes and for explaining the decisive factors for these processes.

(5.2.1) Descriptive categories for internal and external relations

For quite some time, we believed that we would be able to distinguish between the relations within what we call the primarily innovating system[4] (internal relations) and those between this system and its environment (external relations). We have not carried out this idea, partly because certain concepts refer to both types of relations, and partly because it is doubtful how the

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[3] *Cf* G.W. Downs and Lawrence B. Mohr: *Conceptual Issues in the Study of Innovation*. Administrative Science Quarterly, Vol. 21, December 1976.

[4] Our definition of the 'primarily innovating system' is the organization where the decision was made to institutionalize the change. The system is most easily identified through its formal leadership.

primarily innovating system should be delineated. Another reason is that the exact borderlines of various systems are frequently difficult to define.

The type of innovation processes we have examined is, to varying degrees, characterized by conflict. One can talk about the *level of conflict* in an innovation process and its various phases. This level of conflict indicates the degree of confrontation between individuals and between systems. The poles are *consonance* and *conflict*.

Personnel changes can be important for the innovation processes in two different ways. The change can be one of the preconditions for the emergence and development of an innovation, but a personel change may also be a result of the innovation. In either case, a personel change means a change in the system, either preceding or following the innovation (or a certain phase of the innovation process).

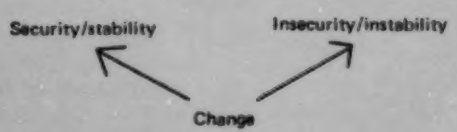
Visibility indicates how known and observed the innovation is within and outside of the primarily innovating system. The degree of visibility is important for the innovation process, because it is the basis for interaction within and between systems.

An innovation process always has a *connection with external changes*, since the innovation means that something new has been introduced from the outside into the system in which it will be adopted. Either one adopts the innovation directly from the outside and begins to implement it, or else ideas, trends, and tendencies are brought into the system from the environment and cause the creation of an innovation within it.

Linkage is a term that is sometimes used, especially in change strategies. We understand linkage to mean the relations to other systems in the environment.

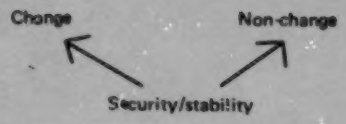
(5.2.2) Analysis categories for decisive elements

Gain/loss is a pair of opposites of decisive importance for the innovation process.[5] The position of the systems is determined by their interests and needs, of whether they win or lose through the innovation. In turn, the position of the systems also largely determine the positions of the individuals within them. These individuals also have their own gain/loss evaluations. Gain or loss may refer to a variety of factors: material resources, expansion possibilities, position, reputation, psychological satisfaction, etc. Our premonition was that the most important gain could be expressed as security/stability and the most important loss as insecurity/instability. Under these circumstances, a change can be experienced in two different ways. For certain persons or systems, the change is a promising way to gain security/stability, while for others, it is a threat of insecurity/instability. The position in relation to the change can be described in this manner



[5] Per Dalin first directed our attention to the dominant importance of this construct. In accordance with Maslow's hierarchy of needs, this view has been developed by Jack Lindquist: *Political Linkage: the Academic Innovation Process*. Journal of Higher Education, No. 5, 1974. See also Report from UKÄ 1975:4, p. 55.

or in this way



The concept pair gain/loss can be used not only to explain the innovation process but also to formulate a change strategy in a specific case. We will return to this in chapter 6.

Ownership is also an important construct in order to understand and explain an innovation process.[6] It signifies the quality of feeling such participation in the emergence and development of an innovation that one feels as an owner or co-owner in the innovation. The absence of this quality is correspondingly important. The quality or its absence can refer to an innovation in its specific occurrence as well as to a general direction of change to which the innovation can be seen as belonging.

The concept of *leadership* is usually given great emphasis in explanations of innovations and innovation processes. It is a system-related concept; the individual/leader is the leader of something, namely a group.[7] We distinguish between what we call formal leaders of the innovating systems (e.g. a rector or department chairman at a university), innovation leaders or primary leaders (i.e. those who have primarily developed and implemented the innovation), and secondary leaders (who have supported the innovation in one way or another). In an innovation process, one can also distinguish opposition leaders.

The concept of *power* is defined by Lewin as the possibility to exercise force of a certain magnitude.[8] We would like to describe power as a system position giving the possibility to exercise force of a certain magnitude in relation to other potential forces in the system. The constellation of system positions invested with power then becomes crucial for the course of the innovation process to the extent that power is realized as force according to the description of force fields in section 5.1 above. In order to implement an innovation, it is necessary to mobilize and exercise superior power.

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[6] The concept is taken from P. Dalin and M. McLaughlin.

[7] "To Lewin the crucial determinant of group atmosphere lies in leadership." G.W. Allport in Lewin, 1948, p. XI.

[8] Lewin, 1951, p. 40.

3 Case studies no. I–VII

I. Undergraduate courses in art at the University of Lund (1972–1975)

(1) Introduction

The innovation consists of a change of the undergraduate courses by introduction of a step-by-step structure of so called ABC-model replacing a more complex structure including a dead end street, and a simultaneous change in the instructional contents. The content change primarily expresses a desire to replace the traditional, chronological/historical approach with an emphasis on artistic expressions in various societies, a study of art in its relations to societal conditions. Further, an integration of non-European art into the educational program is desired.

The innovation is an example of change in goals, structure, and contents of undergraduate education, initiated by the concerned department itself. The innovation is radical—at least as far as its purpose is concerned—and may be said to represent a change of paradigms in the educational program.

Other art departments in the country have been critical. In their comments on the final report from the Swedish Committee for Internationalizing University Education (IC), in which the Lund curriculum plan was presented, the art departments in Uppsala, Stockholm, and Gothenburg definitely rejected the new plan. The paradigm changes *per se* were opposed, sometimes in very strong language. It was also maintained that the structure was pedagogically unsuitable and that there was a lack of competent teachers, of textbooks, and of a research basis for the innovation.

The characteristic feature of the educational program in Lund is exactly this change in paradigms; the step by step method exists—with variations—in other universities as well.

It seemed interesting to us that an educational change that had been judged so harshly by other art departments had actually been implemented in Lund.

(2) Base situation

The traditional, still current art curricula, offered three alternatives in the (introductory) A-level with central curriculum plans, identical for all departments. Undergraduate course A–1 consisted of two subcourses: art from Antiquity to the Renaissance, i.e. approximately to 1550 (10 points), and art from the Renaissance (about 1550) to our time (10 points). A–1 was regarded as an optional course in combination with other humanities courses, or as an introductory course for students in other areas than the humanities. It has also been called a 'hobby course'. It was a dead end street insofar that one

could not continue directly from this course to further art studies. The traditional course with a professional orientation was AB–1, which consisted of the following subcourses: methods (3 points), prehistoric and antique art (5 points), art on other continents (4 points), medieval Western art, including Byzantium and Scandinavia (8 points), European art 1400–1800 (7 points), Scandinavian art 1400–1800 (3 points), Western art in the 19th and 20th centuries (7 points), and Scandinavian art in the 19th and 20th centuries (3 points).

Undergraduate course AB–2 was created in 1969 (40 points total). It is more oriented towards modern art and includes certain behavioral aspects. It consists of the following subcourses: introductory course (1 point), pictorial art in the 19th and 20th centuries with applicable theory of art (7 points), architecture during the 19th and 20th centuries with applicable architectural theory (7 points), artistic crafts and design during the 19th and 20th centuries, with applicable theory (5 points), art criticism (2 points), environment (5 points), art and society (5 points), psychology of art (4 points), and art education (4 points).

C–1, a more advanced course, consisted of seminars and a written assignment (10 points) in combination with an in-depth course (10 points) which, in turn, consisted of a general part and an area of specialization.

This structure of undergraduate education created several problems. One of them was that A–1 was a dead end street insofar that those who wanted to continue their studies within the discipline had to start from the beginning again with one of the AB-courses. This was a clear disadvantage for those students who did not become seriously interested in the subject until taking the A-course, and the dead end character of the course became even more significant for returning adult students. Course AB–1 was traditional and did not take into consideration the shift in emphasis within the discipline which became apparent in course AB–2. This latter course also created problems: in relation to the needs for future professional employment (museums, etc.), the historical content was not satisfactory, and most students also lacked sufficient behavioral background. In addition, the offering of three beginners' courses required considerable resources.

(3) Description of the innovation

The problem situation was eliminated by means of a step by step program model: one single introductory course – A–2 – may now be followed by a B-course, which in turn is a prerequisite for a C-course. In this structure, a fusion of elements from the previous course alternatives has been attempted. Not until the C-level is there a differentiation and specialization.

Even though the step by step model is common for all art departments, there are certain deviations from the one described here. Uppsala and Stockholm offer a choice of A-courses (A-3 and A-4); Umeå retains the old A-1 as an introductory course; Stockholm, Gothenburg, and Umeå have alternative curricula on the B-level.

The internal structure of the Lund model is unique. Undergraduate course A-2 consists of the following subcourses: art in tribal societies and primitive states (3 points), art in the states of the Antiquity (3 points), art in feudal societies (4 points), art in pre-industrial Europe (4 points), and art in the industrial society (6 points).

The structure is historical only insofar that it reflects a development of societal structure over time, but at different points in time in different societies.

So, for instance, the first subcourse treats both European cave paintings and primitive African art of today. The social aspects are illustrated—so, for instance, in the course on art in the industrial society, a distinction is made between art in capitalist societies and art in socialist societies.

Course B-2 consists of the following subcourses: in-depth study of pictorial art (8 points), in-depth study of architecture, residential environment, and utility art (10 points), and a special assignment (2 points).

In the B-course, the subject matter is studied with historically overlapping aspects. Special attention is given to the emergence, dissemination, and function of art within various societies and cultures.

On the C-level, there is a differentiation in three courses of study. All of them are divided: one half consists of lectures and literature assignments, the other half of seminars and a thesis. Course C-2 has a historical orientation; C-3 aims at giving widened insights into and familiarity with current art life from social, economical, and psychological viewpoints, and C-4 emphasizes theory formation and methodology in art.

A less extensive 'reading course' has also been designed in order to facilitate admission to B-2 for those students who have previously attended course A-1. It is regarded as an emergency solution.

(4) Description of the sequence of events

Up to 1972

A continuous change of direction is taking place in art research—if not by means of a change of scientific paradigms, then at least by the emergence of new emphases, differing from the previous focus on history of style. Art is studied in its relation to human behavior, there is more emphasis on modern art (manifested in the department by assistant professor A), there is a focusing on art as a societal phenomenon, and there is more attention to non-Western art (manifested in the department by assistant professor B). Even the redesignation of the discipline in 1969, from art history to art (lit. science of art) can be seen as a new gravitation within the discipline.

On the instructional side, the interior crisis within the discipline is expressed through the creation of course AB-2 in 1969. After that, the problems caused by the previous offering of three alternative courses become increasingly noticeable, and a discussion begins on different possibilities to solve these problems.

Fall semester 1972

The cooperative board of art departments arranges a conference in Gothenburg (January, 1972). A working party force with participants from Gothenburg, Lund, and Umeå discusses a restructuring of undergraduate courses. They present a draft for a step by step model according to ABC principles, in which an attempt is made to integrate elements from the existing courses. In the following general discussions, the draft is criticized by defenders of the homogeneously diachronic structure of the existing AB-1 course. The conference decides that the draft be submitted to all art departments for comments before a new discussion at the next conference.

Spring semester 1972

December 1, 1972: A teacher[1] (assistent professor A) presents a proposal for a step by step model. This causes three counterproposals from three different persons (the department chairman/professor, a research assistant, and a graduate student (C)).

[1] When nothing else is indicated, the description refers to Lund only.

Two of the proposals (by the department chairman and the research assistant) are eliminated during continued discussions. Still, it is that of the department chairman that, as far as content is concerned, more than the other points forward towards the change that will eventually be implemented.

March 18 and 20, 1973: Revised versions of the two remaining proposals are presented.

March 28, 1973: "The Marxist study group's taskforce for an ABC model", a group of graduate students, presents a proposal with generally held requirements on a revised structure of the study program. It is demanded that the program be identical for all students on the A and B levels, that teaching methods be changed, and that "if instruction on non-European art will be introduced, it shall be integrated as a structural element of the historically oriented instruction".

April 10, 1973: The Marxist group presents a proposal for goal definition for the A-course. This is the first appearance of the historic/materialistic viewpoint: "those changes in artistic concepts which are tied to the historically different uses of art in different societies - - - The artifacts - - - are to be studied in accordance herewith, as being historically concrete, class defined elements in and expressions of social structure."

April 16, 1973: Two members of the Marxist group present a draft for an ABC curriculum plan. The components and titles of the A-course show an obvious similarity with the curriculum plan that was to be adopted later. It is suggested that the material of certain societally oriented courses from the A level be studied more in depth on the B level. The C level courses are proposed to have approximately the same structure as graduate courses.

At this point, C merges his own previous proposal with that of the Marxist group. The group's proposal colors the structure of the A-course, and its ideas on a consolidated study program for the B level are also received with attention (all previous proposals except that by the department chairman contain alternative courses on the B level). C's second proposal influences the structure of the B-course through its orientation towards pictorial art as well as architecture, urban environment, and useful artifacts. The C level is designed with four alternatives, three of which have a similar orientation as the ones later accepted. (Two of these alternatives could be found in C's proposal in its revised form.)

The joint proposal, dated May 14, 1973, is accepted by the teaching staff of the department as a guideline for continued work.

May 18 and 19, 1973: A conference is held in Lund, attended by representatives for all art departments in the country. They present their various proposals for an ABC curriculum plan. It is maintained "from the side of the directors of education"—seemingly after preliminary contacts with the Office of the Chancellor of the Swedish Universities—that it might be valuable to test different structures at different institutions, but, during a later stage of the test period, it should be attempted to bring these structures closer to each other again; the importance of continuous follow-up and evaluation is emphasized. The conference decides that (a) the suggested models be tested at the respective departments; (b) the test period end by June 30, 1976; (c) experimental activities, evaluation, and pedagogical development work be coordinated by two persons who were also charged with the planning therefore; and (d) each department receive a recommendation to appoint both a coordinator of

educational development work and a coordinator for evaluation and follow-up of the experimental activities.

June 5, 1973: At an informal meeting, educational methods and course literature are discussed, and a time schedule for continued work is presented (by C).

July 10 and 11, 1973: The Office of the Chancellor establishes experimental normal curriculum plans for Umeå and Gothenburg. Thus, the Office indicated a formal acceptance of differently designed curriculum plans for different institutions.

Fall semester 1973

October 8, 1973: An informal meeting is held to start planning work. The director of studies at that time (a person who previously maintained a passive attitude in the sequence of events) suggests a two-week introduction to the A-course, including training in visual analysis. After a discussion of whether the accepted curriculum plan could be changed, the majority opinion is that no change should be made. Various persons are assigned to search for and suggest suitable course literature for the different courses.

Immediately thereafter, the acting department chairman (B) decides to appoint C (then a graduate student) as part time leader for the continued project work (at approximately SCr 1,500/month).

October 21, 1973: C presents a proposal for instructional methods on the A and B levels.

October 31, 1973: C presents a summary of the extent of the previously required reading list.

November 5, 1973: Discussion of instructional methods, detail design of the A-courses, and of course literature. Task forces are assigned to define required reading for each subcourse on the A level. A representative for the educational development unit of the university administration attends and participates in the discussion of instructional methods.

December 10, 1973: A meeting is held to discuss the task force proposals for course literature.

Spring semester 1974

January 21, 1974: The teaching staff of the department discusses the production of instructional materials etc. for the A-course.

A great number of teachers within the department are assigned to work out instructional materials, partly financed through remaining resources from a previous educational development project. Course descriptions and literature lists are defined.

A request for funding to develop the new curriculum plans is denied by the educational development committee of the university. (Each university disposes of a special fund for supporting educational development projects.)

January 28 and 29, 1974: A teacher meeting discusses course design and literature for part of the B-course. One member of the Marxist group presents a proposal for change in the course design. It is supported by some teachers but not accepted.

Several teachers are engaged in the search for B-course materials.

Feburary 5, 1974: The educational program committee of the faculty approves

the proposals for local curriculum plans for A and B levels.

In June, C is appointed non-tenured lecturer and director of studies. The previous director of studies leaves the department. A part time non-tenured lecturer, who has been a vehement but passive opponent of the new study program, receives a renewed contract, but only for the fall semester. He leaves the department.[2]

The A-course is offered for the first time. Central curriculum plan is established on September 2, 1974, by the Office of the Chancellor. The Office determines that a report on the experimental activities is to be submitted. — Fall semester 1974

Planning work starts for the C level courses. Task forces are formed for course design and literature search.

The B-course is offered for the first time. — Spring semester 1975

Planning work for the C level courses continues.

March 5, 1975: The educational program committee approves the curriculum plan for the C level.

The new C level courses are offered for the first time. — Fall semester 1975

A report on experimental activity to date is submitted as basis for the formal report by the Rector's Office to the Chancellor's Office.

General support for the new course model is noted.

(5) Analysis of the innovation process

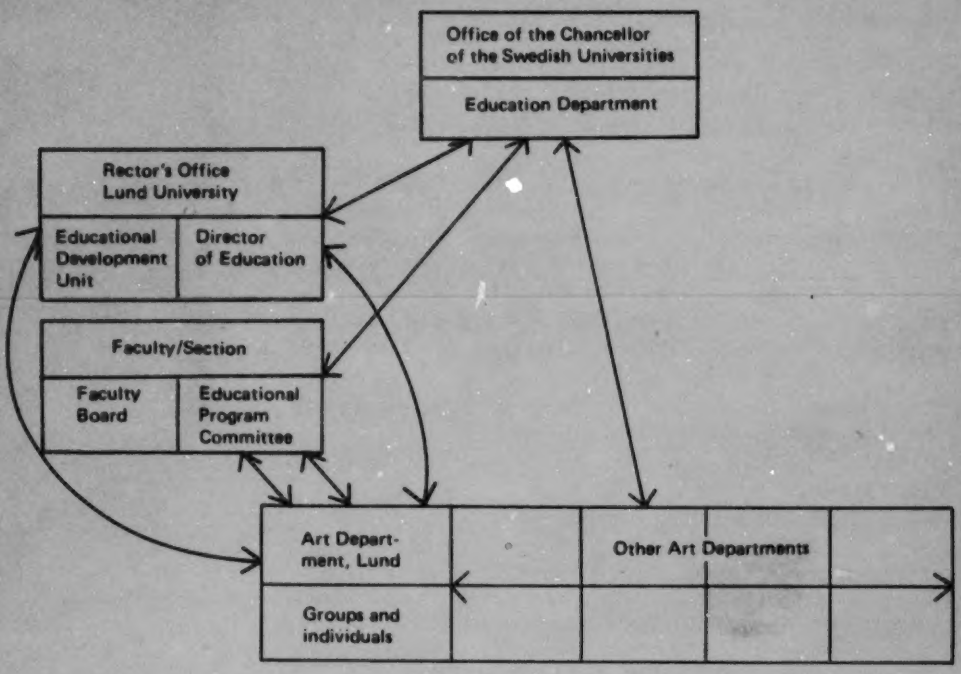
(5.1) Interaction between systems

The interaction between various systems is illustrated in the figure on page 31.

The innovating system is the art department at Lund university. However, the department has acted within the framework of a larger innovation system, namely all art departments in the nation. Out of this cooperative effort, the formal structure of the innovation has emerged, while the important characteristics of the Lund model—the historic/materialistic basis and the internationalism—have been designed within the department at Lund. These specific characteristics have not gained the support of other art departments.

Within the art department at Lund, the most important participants were the graduate student (C) who later became director of studies, and a Marxist student group on the graduate level. Other significant participants are the department chairman—mainly due to his generally positive attitude and his willingness to give free room for the innovation forces—and, in various ways and during different development stages, other individual teachers and researchers, especially B. Characteristic for the innovation process is, however, its collectivistic nature. Throughout the process, cooperation is noticeable between teachers and graduate students within the department. Vital for the development has been the fact that the department has been

[2] The department recommended C as their first choice and another teacher as their second choice. In both cases, the rationale was that they had actively participated in the design of the new curriculum plans. The incumbent was mentioned, as third choice. The Rector's Office was inclined to give priority to the incumbent due mainly to his seniority, but the director of education and the head of the education development unit intervened and influenced the decision in direction of the final result.



headed in an informal manner by the department chairman and the teaching staff. It is doubtful what direction the innovation process would have taken if the management had been exercised through a department board (which did not exist of this department). Within the department, the common opinion is that a more formalized decision-making process in accordance with a FNYS[3] model probably would have made the innovation difficult to carry out; however, the director of education—executive officer of the educational program committee within the faculty—is of the opposite opinion.

The Education department of the Office of the Chancellor has aided in the realization of the innovation, though its support has been passive in nature: the requirements of a uniform central curriculum plan was relinquished, and action opportunities for local innovation forces were created. This standpoint was revealed unofficially by the directors of education to the departments involved. Different local curriculum plans were approved by the Office of the Chancellor as experimental activities. This designation must be seen as a defensive disguise of the fact that an established principle had been abandoned. Using the term "experimental activities" was disguising for the Ministry of Education the deviation from the principle of uniform central curriculum plans.

The director of education has functioned mainly as an observer, adviser, and communicator of new signals from the Office of the Chancellor regarding the possibilities that a local variation be accepted as curriculum plan. The most active participation concerned a major personnel decision.

The role of the educational program committee is purely formal and passive. The curriculum plan was accepted—the department wanted it, the Office of the

[3] FNYS: *Regulations for new experimental activities concerning participation in decision-making launched by the Office of the Chancellor.*

Chancellor had no objections, and it was not controversial in relation to other local interests.

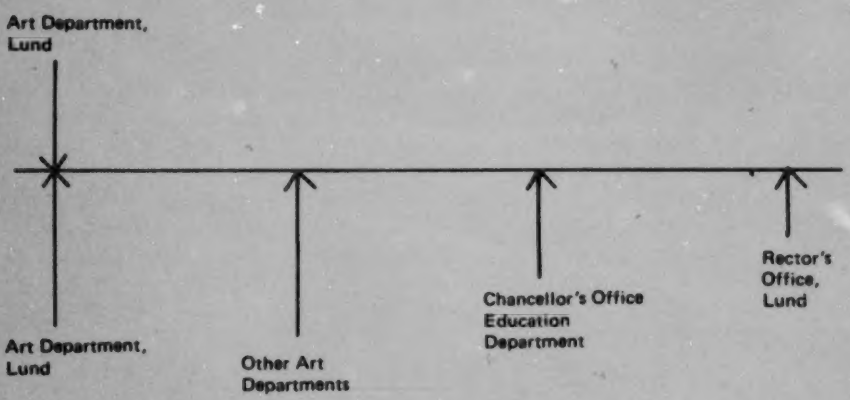
The faculty section has not played any major role in the innovation process per se. Later, however, certain decisions on resources led to a deterioration of the departmental situation. Thus, the section has not rewarded the innovation.

In the same year as the innovation process was initiated (1972), a local development project for undergraduate art education was implemented. However, this project was tied in with the existing structure of the studies and did not positively affect the innovation process—with one exception: in the academic year 1973/74 a minor amount of remaining funds could be used for production of instructional materials for the new courses. For the academic year 1974/75, the department requested a new project grant to directly support the implementation of the new educational plan. However, the proposal has apparently not been seriously discussed; with regard to practice, this is easily explained. The art department had recently received one such grant, and now other departments had to be given priority.

The continued development of the innovation process was influenced by our interviews insofar that the educational development unit initiated closer contacts with the department for follow-up on the innovation.

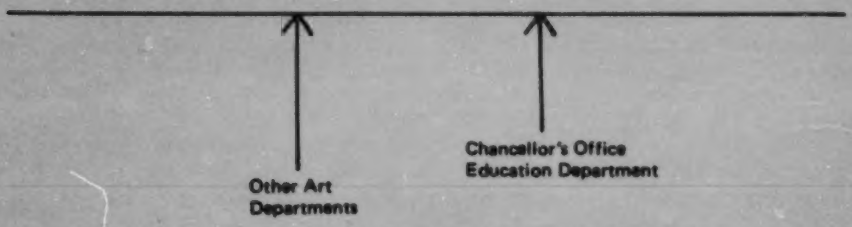
Regarding the relations to other art departments, it must be repeated that all art departments have cooperated in the technical design of the innovation (the step by step model) but they have had divergent opinions on the contents. The increased visibility gained by the presentation of the Lund model in the final report of the Committee for Internationalizing University Education has provoked a directly polemic attitude from certain other art departments. At a new meeting with all art departments in February, 1976, it was agreed that each department would continue experimental activities according to their own guidelines.

The following figure illustrates a summary over time of influences from various subsystems on the balance situation of the innovation process:

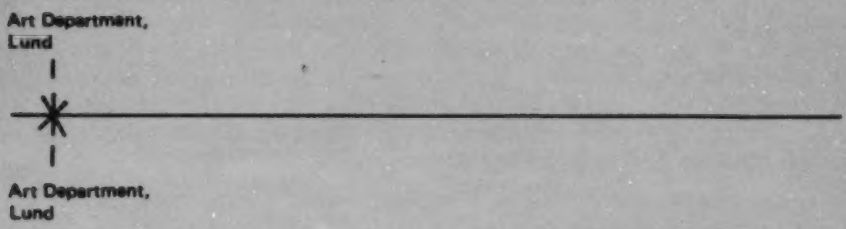


The image is one of an innovation process without opposition after the innovation has taken shape and the mainly passive resistance within the department has been broken. The development over the time line shows three distinct phases. In the first phase, all art departments in the nation cooperated in favor

of a change; the Chancellor's Office was willing to eliminate obstacles for this change:



In the second phase, the force field within the art department at Lund was unclear when it came to the specific design of the innovation.



In the third phase, the force field within the art department at Lund shows a structure where a specific change of direction is obvious. The director of education and the educational development consultant demonstrate a behavior that is determined by formal departmental expectations.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal and external relations

Level of conflict/consonance: Within the department, the innovation shows a high degree of consonance emerging. The exceptions are two persons for whom the conflict is so serious that they leave the department. The conflict with other art departments is in actuality purely verbal and does not influence the process at Lund.

Personnel changes: Two kinds of personnel changes have been important for the innovation process. A graduate student became first project leader and later director of studies. The previous director of studies and a non-tenured lecturer left the department (possibly one more teacher may be mentioned in this context). The changes are of such character that they may be regarded as a 'palace revolution' and a power shift as far as undergraduate education is concerned.

Visibility: The external visibility of the innovation has been remarkably low. The department has been allowed to mind its own business in silence. What happened within the department was not regarded as important and constituted no threat to others. An increased visibility occurred with the inclusion in the report by the Committee for Internationalizing University Education, which caused criticism from other art departments.

Linkage: With the exception of linkage with other art departments in regard to basic problem identification and technical/organizational solutions, the innovation process is characterized by noticeable absence of linkages to external systems. It was a question of an intradepartmental innovation, which did not threaten any outsiders. The most significant linkages were the informal contacts between some director of education and the executive officer at the Chancellor's Office; seemingly, these contacts have given the local directors reasons to assume that they could proceed with work on local variations of the central curriculum plans at the departmental conference in May, 1973.

Correlations with external changes: The obvious correlation of the innovation with new research directions has already been emphasized. The cause of the innovation is to be found in the broadening and differentiation of the research pattern within the discipline.

There are also ties between the innovation and the student actions most easily symbolized with "the year 1968". At least, there are examples that 1968 has been of decisive importance for those graduate students who contributed to the design of the innovation. Generally, the radicalization of the environment may have created a more auspicious climate for the innovation.

An increasing proportion of adult students and an emerging pattern of recurrent education may have further enhanced the appeal of a step by step model without dead ends. The abandonment by the Chancellor's Office of a tightly centralized curriculum plan system has opened the doors for locally designed curricula.

(5.2.2) Analysis categories for decisive factors

Gain/loss: The gain/loss factor is not as obvious in a purely economical sense as it is in the security/stability aspect. Two losers left the department, and the major innovator became a winner as he was appointed director of studies. As previously mentioned, there was a power shift in undergraduate art education.

Otherwise, there were no major conflicts between winners and losers in the innovation, mainly because many persons within the department were assimilated into the innovation and since no interests outside of the department were threatened.

A political dimension of the gain/loss factor could have been expected. The new curriculum plan does mean an educational paradigm change: from emphasis on chronology in artistic style and on Western art to historical materialism and globalism. But this change was made in such a pliant and all-inclusive manner that it could win wide support. Researchers with different

orientations have not felt threatened: the change concerns undergraduate education only, and there is room for their own research orientations in the new curriculum plan. The historic/materialistic or Marxist viewpoint means that art is but one part of society. Also for the non-Marxists among researchers, teachers, and students, it was easy to accept the view of art in its societal framework and with regard to its social functions. The internationalization was perhaps more a matter of integration into the study than of quantitative increase (there are different opinions on this).

However, lack of conflict and the relatively frictionless way (with limited exceptions) in which the innovation process took its course, do not necessarily mean that there are no problems. On the contrary, consonance and harmony may indeed be the main problems for the continuation of the innovation process: it may be too easy to teach, to test, and to study in the "old" manner within the framework of the new curriculum plan.

Ownership: Even if C is the 'administrative owner' of the innovation, the ownership is collective to a very high degree. The instructors and the graduate students of the department are all co-owners of the innovation as a result of the informal, collective, and time-consuming process of shaping the innovation. This collective ownership feeling is expressed in the interviews, in which many persons say "I am satisfied", "I am pleased", "we are proud", etc.

An obvious non-ownership can be observed in other art departments, since their curriculum plans do not include the two content characteristics of the Lund model: internationalization and historical materialism.

Leadership: The formal leader of the innovating system, the department chairman (full professor), was not noticeably active in the innovation process except insofar that he presented one of the original proposals, which in its contents pointed forward towards the end product. However, he has fulfilled an important function which is not uncommon for formal leadership: he let the forces of change work, he accepted the informal collective work, and he also helped achieve a balance, mediating when it was needed. It would be possible to call this a 'diplomatic' leadership role.

The department's director of studies (up to the summer of 1974) was passive, making only certain attempts to oppose the change. It is obvious that this created problems, which were radically solved through a personnel change. If one wants to call the outgoing director of studies an opposition leader, it must also be said that his resistance was very passive.

There is no doubt that the major innovation leader is C, whose position was originally that of a graduate student (he did not belong to the Marxist group). He was later promoted to part time project leader and eventually, in the summer of 1974, to director of studies. His leadership—that has unanimously been characterized as vital for the innovation process—emerged through his personal competence: C was the one who devoted most time to the problems, the one who demonstrated most factual knowledge in the meetings, the one who could merge various schools of thought into a combination that finally won almost unanimous approval, the one who could keep the innovation process going by his energy and his administrative ability.

Among the secondary leaders, assistant professor B made an important decision in his capacity of acting department chairman during the fall semester of 1973: he appointed C as project leader for the new program. This seems to have been of major importance for the development. Through his non-Western research orientation, B has also been influential in introducing the global aspect of the innovation.

The proposal by the Marxist graduate student group was a turning point in the innovation process. Within this group, one or two graduate students can be identified as leaders.

The absence of opposition leaders in the proper sense of the word is noteworthy in this innovation process.

Power: Where was the power that made it possible to implement the innovation? According to the summary of the force field around the equilibrium, much power was not required to implement the innovation, since there was little resistance. A constellation of the majority within the art department at Lund, other art departments, the education department of the Office of the Chancellor, and the Rector's Office in conjunction with the education development consultant created the dominant power of the driving forces. The power situation in the total field is seemingly clear and easy to analyze. If one studies the details of the power situation for subsystems and individuals, the following facts emerge: the Chancellor's Office had formal power, exercised through the removal of formal obstacles for the innovation; the educational program committee had the formal power to stop the innovation—which was not done; the department chairman had formal power which he exercised by accepting and supporting the innovation forces. The important power field is found *within* the art department at Lund, and the person who stepped into the most important individual power position was C. However, he reached his power position by merit of his competence and his activism which earned him the support of the department chairman, such key persons as assistant professors A and B, and an active group of graduate students. Thus, it seems more appropriate to say that the structure of the force field within the department changed so that the innovation could be implemented, than to point out individual persons or groups with power.

(6) Summary

In the previous description, we have stated the problem of three different program entries as the technical starting point of the innovation. When this technical arrangement was questioned, and when the thought of a step by step model with one single entry was accepted, previously latent ideas and forces started moving. These ideas and forces exercised influence within the entire structure of the art department. The ideas touched on the scientific position of the discipline and its relation to society outside the university. These questions have no direct correlation with organizational problems, but the fact that a change emerges in the basic prerequisities creates a situation which is susceptible to change ('unfreezing', according to Lewin).

Thus, the relation between the change in organization of studies and the change in content is not a simple one of cause and effect. Rather, the change occurs in a field where a potential for change emerges, where new forces are freed and can have an impact. The nature and direction of the content changes then becomes dependent on the combinations of groups and persons with different values, motives, and positions, who have been members of the primarily innovating system.

II. Eastern European Studies, University of Uppsala (1972–1975)

(1) Introduction

Eastern European Studies consists of four undergraduate courses, formally being alternatives within political science at the political science department of Uppsala university. They are the first area studies introduced in Sweden. Courses A-4 and A-5 give 10 points each (A-5 is a continuation of A-4) and integrate social science studies of the Soviet Union and other Eastern European socialist states. Courses A-3 and B-3 (20 points each, A-3 is a prerequisite for B-3) are based on social science contents corresponding to A-4 and A-5 but they also include 10 points each for Russian language. (Later, A-12 has been added, a 5-point survey course.)

This case was selected because it represents an unusually complicated and controversial innovation process, where different parts of the higher education system have been actively involved—from the Chancellor's Office to individual departments. The case illustrates the problems inherent in an innovation that cuts across discipline and faculty borders, that is a breach with traditional ideologies and technologies for language instruction, and that bears no correlation with the existing system of rules and regulations.

(2) Base situation

The Slavic languages department at Uppsala had developed socially oriented alternatives of Russian language studies with components of factual contents in addition to pure linguistics. These alternatives applied to both undergraduate and graduate levels. Offered since the 1960's, these alternatives formed one of the starting points for the creation of Eastern European studies.

Another starting point can be identified as the program offered at the Army Interpreter School, also located in Uppsala.

A third starting point is the emergence of an Eastern European Research Center in Uppsala, 1969–70. The purpose of this program is to coordinate graduate education and research concerning the Soviet Union and Eastern Europe within the areas of social science and law.

A fourth starting point is to be found in the interdisciplinary area studies conducted on both undergraduate and graduate levels at universities in many other countries. Frequently, the area studies are combinations of social sciences, humanities, and linguistics.

A fifth starting point is the appointment by the Office of the Chancellor in early 1972 of the Committee for Internationalizing University Education. Part

of the Committee assignment referred to language instruction with practical contents and to studies of other cultures and social systems.

The ideas behind this innovation are developed in the second report of the Internationalization Committee (May 12, 1972). This report states that the introduction of area studies into the Swedish university system is one of the necessary elements in an internationalization of Swedish higher education. Considering the international importance of the Eastern bloc, the educational offerings on this area are insufficient in Sweden. It is further stated that the current language instruction at the Slavic languages departments is, and basically must remain, designed primarily for linguists. In order to integrate Russian language into the area studies, strict goal orientation and limitations of purposes would be necessary.

(3) Description of the innovation

The goal for undergraduate course A-3 is to give knowledge of social, political, and economical conditions in the Soviet Union and other East European states with a socialistic system, as well as to give the students linguistic and methodological skills for improved understanding and analysis of text concerning these countries, thus laying the groundwork for continued, independent studies. The course consists of the following subcourses: introduction to the Soviet Union and Eastern Europe (2 points, primarily history and geography), elementary Russian (10 points), Easter European economics (4 points), ideology and politics in Eastern Europe (4 points).

Course B-3 is a continuation of A-3. Subcourses include a continuation of Russian language (7 points), study of specialized texts with a written assignment (3 points), and seminars on current issues (1 point). In addition, two of the following subcourses are required: external economics of the Eastern European states (3 points), in-depth study of Soviet politics (3 points), policies on science and research in the Soviet Union (3 points) as well as either one of economics, economical regulations, and policies in Eastern Europe (3 points) or an in-depth study of a specific East European country (3 points).

Courses A-4 and A-5 correspond to the non-linguistic parts of A-3 and B-3 respectively.

Courses A-4 and A-5 are characterized by a striving for integration between different disciplines. Courses A-3 and B-3 also attempt to integrate language studies with other elements of the subject area. The language courses are primarily designed to further the student's ability to understand texts in social science. This integration of language and subject matter should also enable the student to gain proficiency in a relatively short time, since the goals are strictly identified and the instruction more intensive than is usually the case in language studies. The ideal is that all teachers be knowledgeable both in Russian and in one or more of the social science areas comprised in the program. Language instruction is given within the framework of Eastern European studies at the political science department, not by the Slavic languages department.

(4) Description of the sequence of events

Members of the Committee for Internationalizing University Education (hereafter referred to as IC) make study visits to universities and professional schools to discuss with teachers and students and to visit certain departments, Spring semester 1972

e.g. the Eastern European Research Center in Uppsala. The chairman of the board for this Center (professor of Business Administration) is also a member of the IC. The Center puts forward ideas and thoughts for future development, including undergraduate education in Eastern European studies.

On the basis of the study visits, a questionnaire to prospective employers and other organizations, as well as deliberations within a reference group, the IC draws the conclusion that its work should be broadly delineated and prioritize a general internationalization of all higher education. The Head of the Education Department at the Chancellor's Office suggests that the Committee should also work out a proposal for special internationally oriented vocational courses. It was agreed with the Chancellor of the Universities that the Committee should rapidly attempt to propose at least one such specialized course.

1972–73 The IC judges it necessary to utilize local readiness for action in order to produce proposals that can be readily implemented. It is decided to propose area studies on the undergraduate level and to seek cooperation with the Latin American Institute in Stockholm and the Eastern European Research Center in Uppsala.

The head of the Eastern European Research Center (A) is recruited as an expert for IC in order to formulate a proposal for undergraduate Eastern European Studies.

During the continued work, the Chancellor's Office is informed by the Ministry of Education that another proposal for a vocational course will not be accepted as a 'genuine' vocational course, i.e. it will not merit its own budget as a separate subject. Consequently, the Chancellor's Office retracts this proposal. The result is that IC formulates a proposal aimed at acceptance as a so called 'non-genuine' vocational course, meaning that Eastern European studies may be attached to another discipline as an alternative course, within the budget of that discipline. In its report of December 5, 1972, IC suggests that "the proposed vocational courses be arranged at the University of Uppsala, by its Eastern European Research Center. If it were necessary to subordinate the curriculum plan to another discipline as an alternative, the program should preferably belong to one of the social science subjects".

The IC proposal is distributed for comments during the spring semester. The educational program committee for linguistics at Uppsala recommends a course of 20 points, without languages. The main argument is that it is "difficult to see the rationale of adding language studies with identical goals as those already existing at the Slavic languages department." Instead, this committee suggests that the curriculum plan include a recommendation to study a 10-point course in Russian at the Slavic languages department. The educational program committee for social sciences at Uppsala recommends a plan without language, 20 points, since there is not "sufficient rationale for including instruction in Russian, even though knowledge of the Russian language is essential and studies of this language could well be combined with the study of the social conditions in the Soviet Union and Eastern Europe". The Rector's Office in Uppsala "concurs with the essentially equivocal criticism" that has been expressed by the educational program committees and "rejects" the suggestion to include language studies. Reference is made to the fact that instruction with almost identical contents and goals is offered by the Slavic languages department.

The Faculty Planning Board for Social Sciences within the Chancellor's Office

is negative to the courses with integrated language instruction and recommends separate language courses. However, the Faculty Planning Board for Humanities has no objections.

Within the Education Department of the Chancellor's Office, the conclusion is that it serves no purpose to establish a central curriculum plan if the university of Uppsala will not offer the instruction required. The management of the Department maintain, however, that one should attempt to implement the program in spite of the opposition from Uppsala. Central educational development funds are secured as well as funds for increased staff intensity in the language instruction.[1] Contacts are initiated (in April) by the IC chairman with the Rector at Uppsala university, and by the officer in charge of the issue at the Education Department of the Chancellor's Office with the head of the Education Department of the Rector's Office at Uppsala university.

Discussions are held between the Rector and the head of the education department, and they agree to an attempt to implement the new program. The Chancellor's Office is informed, orally, by the Rector's Office that it is of the opinion that the Chancellor's Office can establish the central curriculum plans. However, Uppsala would like to see the controversial issue of courses including language instruction tabled for another year.

IC expert A is informally assigned by the Chancellor's Office to review the curriculum plans with consideration of the opinions that were expressed.

On April 26, 1973, the Chancellor's Office in a letter to the Rector's Office states that there is "understanding of the hesitancy expressed from various bodies regarding the proposals. According to the opinion of the Chancellor's Office there are, however, reasons to believe that a limited experimental activity - - - may give valuable experience for future educational planning." Further, it is said, preliminary contacts with Uppsala university have shown that the Rector's Office "in spite of previously expressed hesitancy in principle, is willing to cooperate in limited experimental activities which are also to include language instruction." Later, the Chancellor's Office establishes central curriculum plans as alternative courses in political science, basically in accordance with the IC proposal draft.

The two educational program committees that are most closely involved assign a task force (TF) to handle questions regarding subcourses in Eastern European studies. On July 7, 1973, TF decides that courses A-4 and A-5 (i.e. without languages) are to be offered during the upcoming academic year, that the courses A-3 and B-3 (i.e. with language) will not be offered during the upcoming academic year, and that—when the latter courses will actually be offered—the Slavic languages department will be responsible for this part of the program.

Resource allocation for the first academic year is made according to the norms for so called basic cost increases.[2] This specific initial support gives auspicious

1973—74

[1] The latter were never utilized. This might have been an oversight but it might also be due to the fact that the financial situation of the course was initially good.

[2] The resource allocation system at work by the time of this innovation process is based on the following principles: The base for the allotment of resources to the departments is the number of students at a certain level of studies (first term, second term etc) the previous year. Allotment is being made for groups of 15—30 students according to the norms for so called basic costs. These norms vary between disciplines. If the number of students exceed 30 but not 45 there is a cost increase per individual student, but at a lower average rate per student than the basic cost norms. The same applies if the number of students does not come up to 15. "Basic cost increases" are allotted if there are special reasons for additional resources.

results. The *konsistorium* freezes part of the funding but later disburses almost the entire amount.

Course A-4 starts in the fall semester. The number of students is 44 (according to the register held at the department), 35 of these are at the same time enrolled at the Army Interpreter School.

TF decides to assign the head teacher (B, from the political science department and the Eastern European Research Center) to design local curriculum plans for courses A-3 and B-3. TF states that "TF has found that the courses on Eastern Europe may have a negative recruitment effect on existing courses in Russian language with economic/social orientation, and TF assumes that the educational program committee for languages as well as the Slavic languages department have noticed this."

Course A-5 starts in the spring semester. The number of students is 17, 12 of them enrolled at the Army Interpreter School.

February 13, 1974: TF establishes a local curriculum plan for A-3 and B3.

At the same time, TF suggests the establishment of a course committee with three members to be elected by the Slavic languages department board (two teachers, one student), three members to be elected by the political science department board (two instructors, one student), two members to be elected by the undergraduate students of Eastern European studies, and to include the head teacher as chairman and executive officer.

March 15, 1974: The board of the political science department requests that a course committee be established according to a proposal formulated by B. Following this proposal, the composition of the committee would change no later than at the end of 1975 in the following way. It should consist of the following members: the head teacher as chairman, three teacher representatives (two from the Slavic languages department, one from political science), and four representatives for course participants in Eastern European studies. As per the instruction proposal, the committee is to be responsible for the distribution of resources between departments involved in the program. In general, the Rector's Office confirms the TF proposal but adds its approval of the future change suggestion by the political science department.

May 13, 1974: The course committee starts working. An instructor in Russian from the Army Interpreter School is appointed head teacher for the language instruction against the protests of two teacher representatives from the Slavic languages department.

In its request for funding for 1975–76, the University of Uppsala includes a research assistant position for B in the Eastern European Research Center. The Faculty Planning Board within the Chancellor's Office does not approve of this suggestion.

1974–75 The allocation of teaching resources for the academic year 1974–75 is determined according to the common rules of resource distribution and to the basic cost norms established for political science. In several ways, this is a disadvantage in relation to the real costs: (1) the basic cost norms for political science is lower than that for an integrated social science subject as, for instance, civics; it is still lower in relation to languages; (2) there is no consideration of requirements for more intensive language instruction; (3) the calculations are based on the marginal of student enrolment in political science, which is less

advantageous than if Easter European studies had been regarded as a subject in its own right; (4) the calculations are based on the number of students during the previous academic year, which would be a disadvantage in case of increased enrollment. On the other hand, the allowances for Eastern European studies are earmarked and thus not available for other use within the political science department.

Course A-3 starts in the fall semester with 52 students, 42 of them from the Army Interpreter School. Course A-4 has 6 students.

The course committee decides to make a written statement of opinion to the boards of the Slavic languages and political science departments. The committee members consider it important that teachers and other personnel within the Eastern European studies group, as well as the students, be influential in the design of the studies. The committee also appoints a subcommittee on course literature; one of the teacher representatives for the Slavic languages department (its chairman) protests that no member of the Slavic department is appointed.

Course B-3 starts in the spring semester with 30 students, 22 of them from the Army Interpreter School. Course A-4 has 12 students; course A-5 has 14 students, 3 of them from the interpreter school.

The course committee decides to suggest the following changes in its composition: one director of studies, appointed by the political science department (as chairman), one teacher representative from each of the political science and the Slavic languages department, two teacher and five student representatives from Eastern European studies. The two teacher representatives from the Slavic languages department protest on the grounds that the responsibility of the Slavic department within courses A-3 and B-3 must first be clarified. The same issue is discussed in a later meeting.

The suggested composition of the committee is later confirmed by the Rector's Office with a change: the Slavic languages department will have two teacher representatives and Eastern European studies one (in addition to the director of studies). The committee responsibilities are increased to include preparation of *konsistorium* decisions on teacher appointments.

At the same meeting in which the composition of the course committee is discussed, the committee decides, "in order to further enhance the cooperation between the Slavic languages department and the Eastern European studies group", to appoint a committee with two representatives for the Slavic languages department, one for the teachers and one for the students in the Eastern European group. This new committee is to design the language component, to initiate cooperation with the specialized linguistic researchers in the Slavic languages department with reference to text material for the new courses, to request funds for a common educational development project in order to produce instructional materials, to evaluate instruction, and, finally, to plan a common teacher conference. In the following meeting, the representative for the Slavic languages department declares that such cooperation will be acceptable only under condition that the Slavic department be given sole responsibility for language instruction. At a later meeting, the Slavic department refuses to participate in a common teacher conference.

The joint request for educational development funds is rejected. On the other hand, the chairman of the Slavic languages department, C, receives a grant for production of professional text material in Russian.

In a statement made in Feburary, 1975, the board of the Slavic department requests that the funds for "those courses in Russian presently offered within Eastern European studies" be transferred to the Slavic department, that the students enrolled in these courses be re-enrolled in the Slavic languages department, and that the course committee for Eastern European studies have no more than an advisory function in its relations with the board of the Slavic department. In a "counter-statement" from early March, the students enrolled in courses A-3 and B-3 protest against this request and emphasize the importance of integration between language and social sciences in their educational program. A same emphasis is found in a simultaneous memo from the course committee for Eastern European studies, and the mere existence of a body such as the committee is cited as a guarantee for continued integration. In the memo, it is further stated that the Slavic department has not made its opinions sufficiently clear in the committee: "It is regrettable that the representatives of the Slavic languages department have utilized other avenues for their argumentation."

The activities of the course committee are characterized by great adversities, and the representatives of the Slavic department are often in opposition.

Due to a decrease in enrollment, a number of tenured instructors in political science have become superfluous. The resource allocation unit and the group of officers in charge of the social sciences within the Education Department at the Office of the Chancellor attempt to have a decision that these instructors take on instruction in Eastern European studies. This arouses strong reactions from Eastern European studies, political science, and the Rector's Office. In a memo to the Chancellor's Office, the Rector's Office rejects the suggestion with reference to the fact that the teachers in question lack the required proficiency in Russian as well as in social science subjects other than political science.

In another memo the Rector's Office requests that the Office of the Chancellor classify Eastern European studies as an inter-disciplinary study program (a new possibility), whereby an increase of its budget might be created. The Chancellor's Office does not include Eastern European studies in its proposition to the government.[3]

Fall semester 1975

The number of students in A-3 is 62 (38 of them from the Army Interpreter School) and A-4 has 32 students.[4]

Resource allocation for teaching is determined by the Chancellor's Office according to the same formal rules as previous academic year, which in actuality means a deterioration of the situation. This is counteracted through additional grants from the *konsistorium* and from the department of political science; allegedly also by introduction of inefficiently large groups for examination and by underpayment and overutilization of instructors.

The National Bank Foundation gives a grant for a research assistant position for B.

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[3] Great confusion and conflicting opinions on motives and actors, were noted during the interviews within the Office of the Chancellor.

[4] The number of students was spring 1976 course A-4 38, A-5 22, B-3 29; in fall course A-3 76, A-4 108, A-5 22, B-3 2, (31); in spring 1977 course A-3 21, A-4 101, A-5 58, B-3 43, A-12 20.

A vacant tenured position in political science causes discussion. It is attempted to redesignate it as a position in Eastern European studies. One of the proponents of this redesignation is the director of studies in the political science department, but he meets vigorous opposition from within the department. The university suggests transfer to another subject area than Eastern European studies or political science, and the Chancellor's Office acts in accordance with the latter suggestion.

In a memo to the *konsistorium*, the Slavic languages department board requests permission to leave the course committee for Eastern European studies. The department cites as its reasons that the cooperation with the director of studies for the Eastern European studies group does not function well, that the opinions expressed in February, 1975, have not been seriously considered, and that "we are profoundly sceptical towards the organizational structure of Eastern European studies, specifically the language instruction integrated therein." In a statement of opinion handed in by the course committee this request is rejected.

(5) Analysis of the innovation process

(5.1) Interaction between systems

The main interaction lines between the systems are illustrated in the figure on the following page.

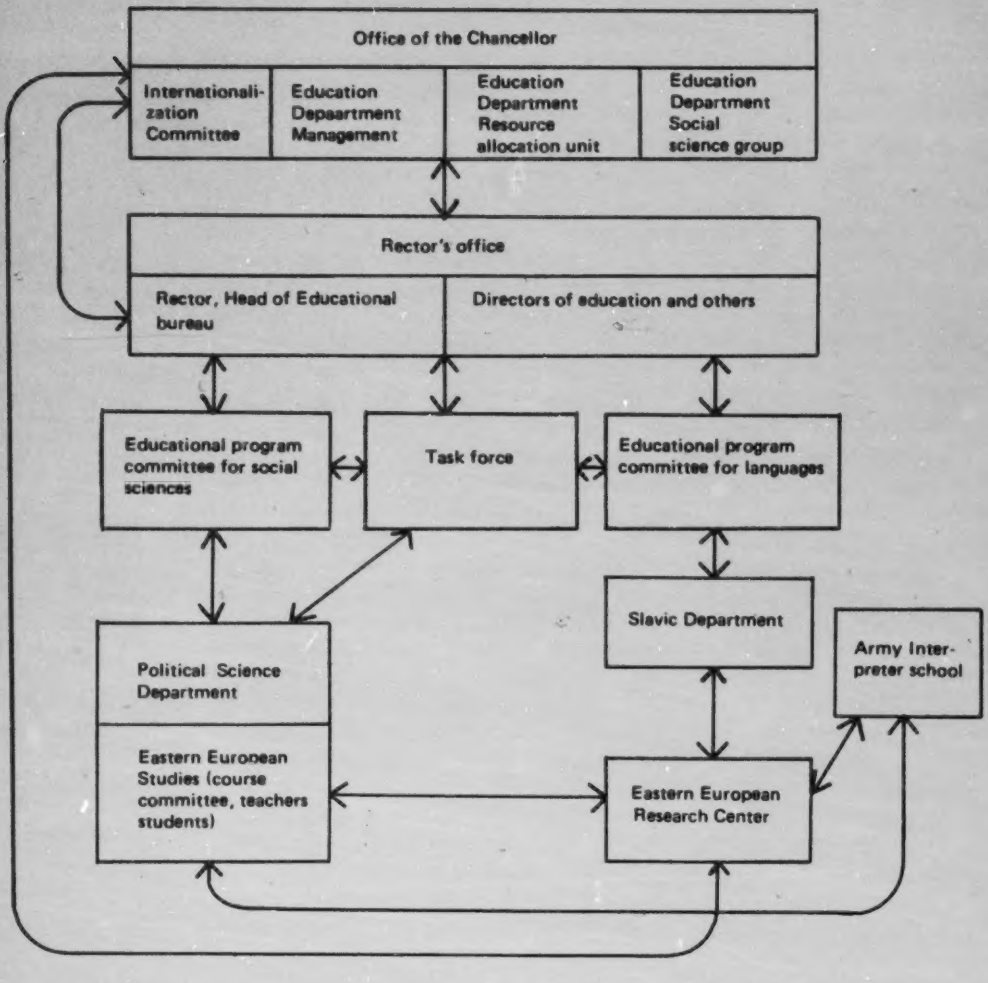
The real initiator of the innovation is the Eastern European Research Center which formally bears no relation to the instruction in Eastern European studies. But the idea came from that Center (A and B). The head of the Center (A) formulated the proposal, and a great portion of the instruction is carried out by graduate students within the Center (even though they specialize in various disciplines, such as Slavic languages, political science, or economics).

However, the primarily innovating system—within which the innovation process takes place and where the interaction is unusually lively—is considerably larger. This system includes the language and social sciences components of Uppsala university.

The Internationalization Committee of the Chancellor's Office filled an important function in the initial stages of the innovation process. The alliance between IC and the Eastern European Research Center led to the formal proposal for the innovation, which was presented by the IC. When the innovation process was in danger of dying, the IC chairman contacted the Rector of Uppsala university, and this led to the realization of the innovation. IC also fulfilled another important function through its cooperation with the management of the Education Department at the Chancellor's Office. In this part of its work, IC has demonstrated a clearly action-oriented project methodology.[5] IC concluded its activities in June, 1974.

The management of the Education Department at the Chancellor's Office participated in overcoming the initial difficulties that were encountered in the institutionalization of the innovation, e.g. by creating additional economic resources. Such active support is not given during later stages of the innovation process. Among other members of the department, the resource allocation unit

[5] In regard to resistance to the innovation at Uppsala university, we refer, here and hereafter, to that part of the program where social science and language elements were integrated. Social science courses without language instruction were not controversial.


Office of the Chancellor
Internationali-zation Committee
Education Depaartment Management
Education Department Resource allocation unit
Education Department Social science group
Rector's office
Rector, Head of Educational bureau
Directors of education and others
Educational program committee for social sciences
Task force
Educational program committee for languages
Slavic Department
Army Inter-preter school
Political Science Department
Eastern European Studies (course committee, teachers students)
Eastern European Research Center

must be characterized as having had a formally neutral attitude. A system of rules has been applied which is not adequately applicable for Eastern European studies. The Faculty Planning Board for Social Sciences has shown no interest in supporting Eastern European studies or Eastern European research.

The Chancellor of the Universities became personally involved in the innovation process when he was approached on a couple of critical occasions by IC and the Eastern European Research Center, respectively. His positive attitude towards the innovation was, psychologically, supportive to the innovators. It is doubtful, however, if it has had any positive effect on the actions by other officials within the office.

If certain actions by the Chancellor's Office demonstrate the fragmentization that is frequently considered typical for bureaucracies, this view is somewhat less applicable for the Rector's Office in Uppsala. There, it is more a question of a development over time from a mainly negative to a mainly positive attitude. In the base situation, both educational program committees involved opposed the innovation. The position of the Rector's Office was the same (expressed by the administrative director and a deputy head of section)—basically due to adherence to normal procedure. However, after contacts from the Chancellor's Office the position of the Rector's Office is changed, by the Rector himself and the head of the education department, who had not previously participated in the handling of the matter within the office. They accomplish this change by creating a new situation and a new structure, which predetermined the outcome of the case.

It is natural that the educational program committee for languages opposed the innovation;[6] it was not merely a question of supporting its "member", the Slavic languages department but also of countering what amounted to an attack against the territory of all language departments though directed only at the Slavic department in this case. Thus, it is only natural that the director of education for languages, D, vehemently opposed the innovation in his capacity of 'ombudsman' or 'director' of these departments. It is more difficult to explain the actions by the educational program committee (and the Faculty Planning Board) for the social sciences. It may be a matter of caution when faced with radical changes. If a more specific explanation is sought, we hold it for most probable—but we are far from maintaining that this hypothesis has been proven—that it is fundamentally a matter of collective reaction and collective management on the part of the educational directors. D was the person who was most directly involved and also engaged himself actively in the issue; it should not be surprising that, as a consequence, he more or less automatically dominated the collective of educational directors in this question. The territorial interests represented by D were the ones that were threatened this time, but another time, the threat could be directed towards the territorial interests of other educational directors. Thus, the so called 'vendetta principle' may have been influential. The territory of the linguistic subsystem was threatened while that of the social science system was not negatively affected. Via a common system, in this case the collective of educational directors, the linguistic subsystem could then, presumably, have gained dominance over the social science subsystem.

More than at other universities, the educational directors at Uppsala university tend to act as a cohesive, goal-conscious group that wishes to achieve and

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[6] Very negative reactions by officials at the Rector's Office in Uppsala towards the contacts between IC and the university rector illustrate the fact that such action orientation can be negatively regarded when compared with a more conventional methodology.

maintain a managing system position. The attitude of this group seems to have great influence on other "neighboring" officers within the Rector's Office. According to our evaluation—which we think is reasonable—this important group of administrators took a negative attitude in the initial stage of the innovation process. When the Rector changed the situation by expressing a personal preference, the group was, on one hand, loyal to him, but on the other hand, there was also a negative prestige effect because they had had to yield from their previous standpoint.

The most important element of support for the innovation by the end of 1975 was a later change in attitude within the group of involved officials in the Rector's Office. There seem to have been three reasons for this. One is that the innovation was successful; the program attracted students, and the students were satisfied with the program. Secondly, the continued opposition by the Slavic language department was regarded as negative and not constructive. The third reason is, in our opinion, a result of the natural attempts of any bureaucracy to soften or eliminate conflicts that complicate a situation or have an unpleasant effect for the bureaucrats. At first, this avoidance of conflict was expressed in resistance to an innovation that could presumably create conflict. When the innovation was implemented in spite of this resistance, the natural attitude was to make the innovation function as frictionlessly as possibly.

After stating their opinions on the innovation proposal, the two educational program committees involved in the innovation had no major function except the appointment of the common task force. Even if this TF initially exercised a certain leveling and supportive influence on the innovation, it seems nevertheless to have had a weak position. This is not surprising, considering that the TF is a manifestation of educational program committees that normally have a weak position themselves. One example: to create a basis for all activities, TF decided to give the entire responsibility for language instruction to the Slavic department. TF has neither retracted this decision nor followed through on it. *De facto*, the decision has rapidly become obsolete.

Instead, power has successively been transferred to the course committee and thereby to the director of studies as well as to teachers and students in the Eastern European studies program. This is an adjustment to the natural, informal power of teachers and students who are most actively involved in the issue at hand. Staff members at the Rector's Office have been instrumental in the formalization of this adjustment: they have supported changes in composition and responsibilities of the course committee. Most important is the fact that the course committee has gained power to appoint teachers.

The department of political science is the formal support organization, and Eastern European studies functions within the framework of this department. What is the explanation for the political science department not only taking on this role but also actively supporting Eastern European studies on several occasions? At least a couple of reasons are obvious. B was a key person insofar that he belonged both to the political science department and to the Eastern European studies. During a period of decreasing enrollment, a recruitment of students to Eastern European studies could have two effects: to make instructional hours available to political scientists, and also to improve the general position of the department.

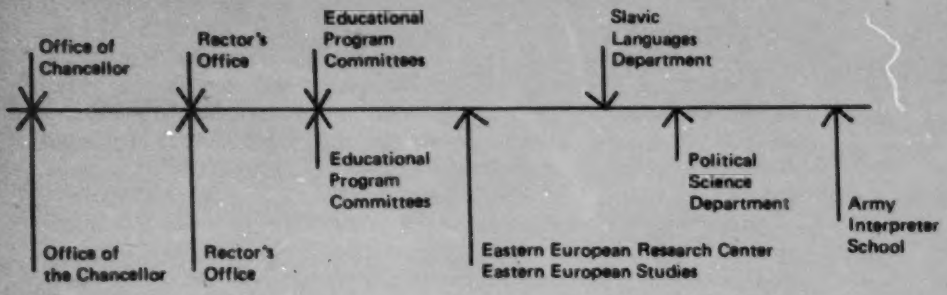
The opposition by the Slavic languages department against the innovation is as energetic as one could expect when territorial boundaries and value systems are so obviously threatened as in this case.

The Army Interpreter School is an acting external system. Its importance lies mainly in the fact that its students have been enrolled in the Eastern Euro-

pean studies program. Thereby, they have created a basis for automatically allotted funding without loading the instruction to a corresponding degree. It is difficult to believe that the innovation could have been implemented without this support.

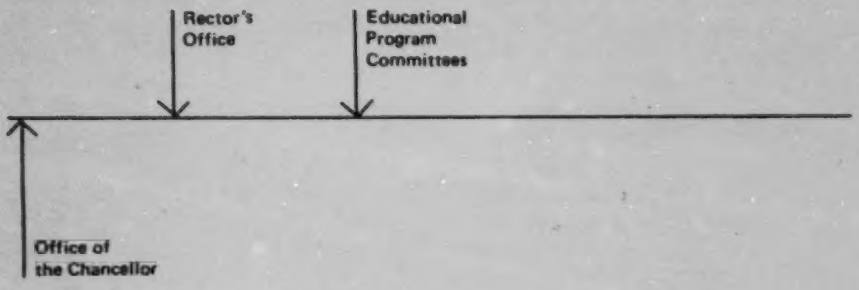
In any innovation, the influence of the local educational development unit is of interest. In this case, it has been limited to a certain cooperation in an investigation of experiences from integrated instruction during the fall semester 1974. Other efforts to follow up on the innovation and especially to investigate the new type of language instruction cannot be demonstrated.

A summary over time of the influences by important subsystems on the equilibrium gives the following picture:

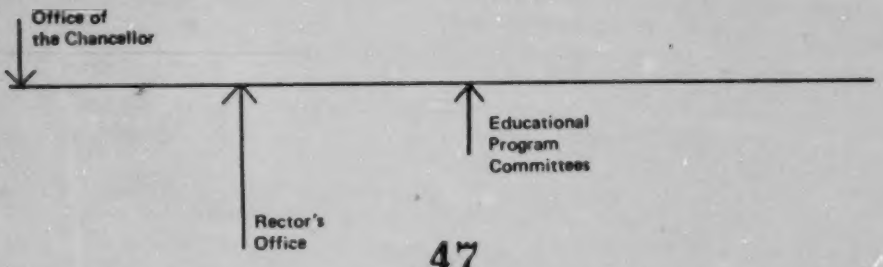


The picture of the force field is complicated, since many systems have been involved. Opposition has been strong and widespread.

If the illustration is limited to the Office of the Chancellor, the Rector's Office, and the educational program committees, the change in the force field can be shown by a comparison of the situation at two different points in time. At the beginning of the spring semester, 1973, before the Rector became involved, this part of the force field looked like this:



In the spring semester, 1975:



The support for the innovation was moved from central to local level. The shift of the Office of the Chancellor from driving force to opposing force depends on the fact that IC has ceased to exist and no longer can act in favor of the innovation, on personnel changes in Department management at the Office of the Chancellor and consequently, the resource allocation unit and the group in charge of social sciences have become the most active participants within the Office of the Chancellor. The emphasis has shifted towards applying a fixed set of rules, away from supporting an innovation in its initial stages. The structure of the force field within the Chancellor's Office had changed. We have previously noted the reasons for the position change within the Rector's Office at Uppsala.

There is also another interesting aspect of the change in roles between central and local levels. The local position change expressed an adjustment to reality. Rapidly and sensitively, the reactions of the teachers and students were pinpointed, and the result was a rapid, informal evaluation which was reflected in action. On the other hand, it has become obvious to us in our conversations within the Chancellor's Office that the Office has had no realistic conception of the actual situation in Uppsala.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal and external relations

Level of conflict/consonance: Within each one of the acting subsystems, the level of conflict is seemingly low. The level of conflict in the Rector's Office, for instance, is remarkably low in spite of a formally surprising position change and in spite of the changing views of the situation.

The strong conflicts are found between the subsystems. The primary conflict is that between Eastern European studies and Eastern European Research Center on one hand and the Slavic languages department on the other hand. In an early stage, there was also an obvious conflict situation between the Office of the Chancellor (primarily IC) and parts of the Rector's Office (foremost its director of education for languages). In a later stage, there is also a conflict situation between the Chancellor's Office and the Rector's Office (regarding utilization of superfluous teachers in political science and regarding classification of Eastern European studies as an inter-disciplinary study program). The hands changed, but in both cases, officials within the Rector's Office are indignant over the actions by the Chancellor's Office.

Personnel changes: The only personnel changes that might have been of importance for the innovation process are changes in the management of the Education Department within the Chancellor's Office. One result of the innovation process is that a new group of instructors has entered on the undergraduate level, mainly graduate students within the Eastern European research area. Finally, the innovation process has, to a great extent, been characterized by potential rather than actual personnel changes, namely as determined by the power to appoint language instructors.

Visibility: The innovation has gained high visibility throughout the entire higher education system due to the request for comments on the IC proposal. Judging by the opinions, it does not seem as if the language education program committees outside of Uppsala have seen the proposal as a serious threat. It may be that knowledge of and dependence on the conditions in Uppsala was required to mobilize a territorial defense.

Linkage: The most obvious aspect is the mutual linkage between the IC and the Eastern European Research Center. The linkage between Eastern European research/Eastern European studies and the Army Interpreter School is also vital.

Correlation with external changes: There does not seem to be a correlation with any acute changes in the vicinity. Naturally, the Eastern European studies program has depended on the emergence of area studies in other countries, on the Swedish interest in relations with the Eastern European nations, and on efforts to internationalize higher education.

(5.2.2) Analysis categories for decisive factors

Gain/loss: Inherent in the conflict is a considerable struggle for economical resources and basis for teaching hours. According to TF minutes, there were fears that the new program would draw students from the socially oriented language courses in the Slavic languages department; however, there is no factual support that this really happened. On the other hand, the Slavic department would naturally have gained a proportionately very important enrollment increase if the language instruction for Eastern European studies had been placed there.

The struggle for resources is specifically intensified by a decrease in enrollment which had hit both the political science and the Slavic departments at the same time as Eastern European studies had recruited a growing number of students.

This struggle for resources has an obvious security aspect, since it was a question of continued income for teachers during a critical period with decreasing enrollment.

The gain/loss aspect is highly applicable to ideology and technology—namely diverging opinions on goals, methods, and teacher competency for the language instruction. Teachers and students in Eastern European studies are primarily oriented towards ability to read social science texts, towards methods that form close associations between word and fact (the integration), and teachers who can and want to implement these goals and methods. It seems clear that the Slavic department does not place the same emphasis on integration between word and fact. Otherwise, it is not easy to distinguish to what extent the ideology and technology conflicts are based on theory or on differences in opinion regarding the practical applicability of theories. In essence, the conflict results from mutual distrust and lack of confidence.

The power to appoint teachers is a central issue, and the power struggle has been at its peak in questions regarding teacher appointments.

The gain/loss scale has many aspects, and we can only outline a few. Previously, we have remarked on the interest of the administrtion in 'peace and quiet', i.e. in an organization that functions without embarrassing conflicts.

Ownership: Ownership of varying character can be identified for IC and the previous management of the Education Department of the Chancellor's Office, for the Rector and the head of the education department at the university, for A and B. Non-ownership applies to certain officials at the Chancellor's Office and for the chairman of the Slavic department, C.

Let us start with the Office of the Chancellor. It is obvious that IC has had partial ownership in the innovation. But this holds true for the Department management as well. At an early stage, the head of the department encouraged the IC to treat the question of internationally oriented vocational courses as a particularly urgent matter. Further, the second man in command had long

been interested in the work of the IC on new types of professional language training. Then, IC finished its work, and the Department management underwent personnel changes. This was the end of a temporary subsystem which had felt co-ownership in the innovation and therefore had wanted it to be successful. Due to its position, this temporary subsystem had also been able to direct the actions of the Chancellor's Office in a consistent way, advantageous for the innovation. When this subsystem disappears, the resource allocation unit and the group in charge of social sciences emerge as the most important subsystems in the Chancellor's Office. It cannot be expected that they should feel any ownership in relation to the innovation.

At the university level, both the Rector and the head of the education department had an obvious feeling of coownership, as expressed in our interviews with them. In the Rector's case, this can be traced to his previous assignment as chairman of a committee for new study programs in the philosophical faculties and to his personal interest in unconventional educational program combinations. The coownership expressed by the head of the education department must be seen in conjunction with his involvement in internationally oriented education. He had previously presented proposals for area studies. In addition, he had himself studied Russian under the specific teacher at the Army Interpreter School who was suggested to head the new language training activities.

Directors of education and other officials at the Rector's Office did not feel any kind of ownership in the innovation. IC had neglected or not understood the importance of 'linkage' and 'ownership'.

It is not necessary to discuss the ownership of A and B. However, the non-ownership in C's case is especially interesting.

C, chairman of the Slavic languages department, had previously made an important pioneering contribution to professional language instruction, e.g. socially oriented training in Russian, where the Slavic department at Uppsala had lead the way. For C and the Slavic department, it is thus not only a question of non-ownership; it is a case of 'stolen' ownership. The intensity of the opposition against the innovation by C and the department is unusual; this must be seen in light of the stolen ownership.

Leadership: If one considers the linguistic and social science components of the university of Uppsala as the system directly touched by the innovation, the Rector of the university emerges as the formal innovation leader. The process becomes an illustration of the power a university rector can wield if he so desires.

In the first phase, A is the innovation leader; during the later phase, B appears as the leader with immediate responsibility for the program.

Those persons within the Chancellor's Office who have assisted in the creation and institutionalization of the innovation may be regarded as secondary leaders.

The evident opposition leader is C. This is a role that follows automatically from the system position as chairman of the Slavic department, but it also has a specific accent due to the stolen ownership situation. It must be emphasized that there is nothing negative in the opposition leader's role. Opposition leaders fulfill an important function, since their criticism tends to screen the proposed innovations, and in efforts to overcome the opposition, the quality of an innovation is frequently improved.

Initially, the director of education for languages education emerges as an important opposition leader. However, he leaves this position in an early stage of the process.

Power: The power position of the Chancellor's Office is based partly on its control of the purse strings, partly on its authority (formal and real). We have already discussed the change in internal power structure at the Office of the Chancellor.

We are of the opinion that the group of directors of education within the Rector's Office, represents considerable power. However, the Rector himself had even more power.

On the level of educational program committees and departments, a shift in power takes place towards the Eastern European studies committee, where teachers and students gained dominance. This process is characterized by a successive growth in power for the Eastern European studies group (teachers, students, and course committee). At the same time, the power of the Slavic languages department decreases. We have previously discussed the causes of this shift.

(6) Summary

The case of Eastern European studies illustrates how an idea that is originally nourished by a couple of persons within Uppsala university is lifted out of this system, made visible, and gains support from the Office of the Chancellor.

Later, the Chancellor's Office attempts to formally introduce and implement the idea at the university. One may call this a periphery-center-periphery model. The innovation arouses opposing views on the basic components of the university system, such as membership, ideology, and technology. Previously latent polarities in this tri-dimensional borderland are activated by the threat inherent in the innovation. The conflicts turn out to be more destructive than constructive. However, those teachers and students who are involved actively in the innovation demonstrate that they have the strongest power position.

III. Proposal by the Committee for Internationalizing University Education for a new curriculum plan in civics (1974–1976)

(1) Introduction

In its final report on "Internationalizing Education" (UKÄ report No. 21, 1974), the Internationalization Committee of the Chancellor's Office (hereafter referred to as IC) presented an outline of a new curriculum plan for the AB-course in Civics (40 points), a requirement for teacher certification in Civics. The draft suggested an entirely new structure of the subject entity: grouping to problems rather than along disciplines. Further, it attempted to achieve a more genetic perspective on social phenomena and to treat them in a global perspective.

Among those who commented on the draft, it was received positively by the authorities most closely involved. However, the draft has not resulted in any concrete changes of the desired nature.

The case is an unsuccessful innovation attempt according to a center-periphery model.

(2) Base situation

Civics is a so called "block subject" and consists of elements from political science, economics, and sociology, and it is handled by a department group for Civics. This cooperative body for the three mother departments has—possibly to a varying degree in various universities—had certain independent identity. The civic subject group has a chairman, a director of studies, and teachers—and it may be regarded as subsystem at its own albeit vague and weak.

At most universities, the curriculum plan consists of seven courses, namely: sociology 1 (5 points), sociology 2 (5 points), Swedish and comparative politics with administration and social policy (8 points), international politics and political theory (5 points), introduction to economics and economical analysis (10 points), economical policies (3 points), and current societal problems (4 points). Thus, the program demonstrates a distribution between sociology (10 points), political science (13 points), economics (13 points), and "free points" (4 points).

In 1972, a task force assigned by the Office of the Chancellor presented a proposal for a new curriculum plan. The proposal was vigorously opposed, except at the university of Stockholm, where the chairman of the task force was director of education within social sciences. The new proposal was im-

plemented at the Stockholm university only. It consists of the following courses: methods and theory in social sciences (6 points), introductory sociology and social psychology (6 points), political ideologies (2 points), Swedish and comparative politics with administration and international politics (7 points), allocation of resources (3 points), planning and economic growth (3 points), economic policies and steering systems (4 points), labor market issues and policies, education and career choices (3 points), and an independent project (6 points).

(7) Description of the innovation

IC considered the existing curriculum plans to be focused on Swedish societal conditions and not sufficiently international in their perspectives. IC also criticized the traditional curriculum plan for its tendency to "describe and analyze society as if it consisted of the separate components sociology, political science, and economics. It should be possible to achieve a more realistic and adequate orientation as well as significant gains in time and efficiency, if a problem area would be treated from the viewpoints of all three disciplines. This would also facilitate internationalization of the studies."

The IC draft suggested the following design:

Course 1: Individual / family / group / society
The emergence of societal structure; individuals and groups in primitive societies (economic history, social antropology). The effect of industrial production structure on relations between individuals and groups (economic history, sociology). Social relations and attitudes, social pressure processes and opinion forming in industrial society (sociology, law).

Course 2: Allocation of resources
Principal problems of resource allocation; different production systems and their societal consequences, distribution of labor, wage structures (economics, political science). National and global distribution of resources, the situation of the less developed countries (economics, political science, human geography). Equalization of resources, development cooperation, taxation systems, social policies, public services (economics, political science).

Course 3: The individual and the labor market
Process of studies and career choice, in correlation with education and labor market (sociology). Organizations, wage negotiations, and judicial rules of the labor market (political science, law). Economic trends and policies, labor market policies (economics, political science).

Course 4: Government
From village society to macro-communities (history, economic history, political science). From monarchy and feudalism to modern democracy (history, political science). Swedish political ideologies (political science). The Swedish political system from a comparative point of view; the administrative system (political science, sociology).

Course 5: The internationalization process
Global adjustment problems: resources, environment, population, etc. (economics, human geography). International commerce, internationalization of economy, economical integration (economics,

business administration). International political relations and systems; political consequences of the internationalization process; problems of peace and conflicts (political science).

Course 6: Independently selected problem studies
Independent or group work on a problem selected from the curriculum. The problem is to be comprehensively treated from a social science standpoint. Can be presented orally, as a memo, or as a term paper. Training in information gathering and methodology for analysis.

IC underlined that the purpose of the draft was only to illustrate a principle which could be practically delimited in various manners and with different limitations of the problem areas. "Most important is at present to create a discussion of the principle as such." It was further emphasized that the subject indications in parentheses were only examples, and that the distribution of points between the courses could be varied. However, Course 4 with "its central element of political science" should have a higher point number.

It is further stated in the IC report:

> "It is desirable to start experimental activities according to the proposal draft, at least at one university. The first step would be to design a complete curriculum plan, simultaneously with planning for local implementation of the program. Detailed formulation, planning, and implementation of a program of this nature is a demanding project. Extensive preparations are needed to plan integration and problem orientation, as well as for literature search and teacher preparation. Thus, it is necessary that sufficient resources are allowed for the planning activities."

(4) Description of the sequence of events

Summer 1974 — IC presents its final report with a proposal draft for a new curriculum plan for civics. The draft has been authored within the committee without assistance from expertise within the discpline, and without local connections.

1974–75 — The report is distributed for comments. The opinions of the most closely affected bodies is summarized in the table below:

	Social Science Education Program Committee	Department group for Civics	Political Science Department	Economics Department	Sociology Department
Uppsala	P	–	O	O	–
Lund	O	–	–	O	–
Stockholm	P	P	O	O	O
Gothenburg	O	–	–	–	–
Umeå	P	P	O	O	P
Linköping	–	P	–	–	–

(P = positive opinion; O = opinion has been presented on the report; but the specific draft has not been commented on; – = no opinion expressed.)

The educational program committee in Uppsala writes that it has no objections to certain courses that have been presented, e.g. the draft for civics, and continues: "We find the genetic and problem oriented approach to civics specifically attractive." The department group for civics at the University of Stockholm presents the most detailed opinion. The department group is "in principle positive" to the draft but points out four types of problems: (1) the course should be expanded from 40 to 60 points; (2) integrated instruction is pedagogically and administratively demanding; (3) considerably greater teacher resources will be required, since team teaching would be necessary; and (4) new instructional materials must be designed. The educational program committee and the faculty at Umeå university are "undividedly positive" to the draft. The department group for civics in Umeå finds the draft "very interesting" and "worthy of being the foundation for development work. The departments participating in the teaching of civics are willing to participate in such development work if special resources can be made available."

The Chancellor's Office presents an action program for internationalizing higher education, included in its requests for funds (UKÄ Report No. 15, 1975). The Office states that it will support that the ideas of IC concerning changes in content of education "are utilized in the continuous revision of curricular". The Chancellor's Office would, for instance, "support local initiatives in this direction" and "test or design educational plans (curricula) with consideration of IC's proposal."

In our investigation of potential results, we have found the following:

In *Uppsala*, the proposal has had no direct effect on instruction. However, a certain degree of internationalizing can be noticed. Nor has any obvious change taken place in *Lund*. The comment from *Gothenburg* is that the draft has not been seriously discussed; rather, the fact that the students now are working with international material in a more concrete and inter-disciplinary matter is due to the international orientation of in-service teacher training (also proposed by the IC). No change is reported from *Linköping*.

In *Umeå*, there was initially most active interest in starting experimental activities according to the principles expressed by the IC. For reasons that will be discussed later, nothing happened.

In *Stockholm*, the IC suggestion has hardly had a direct effect on the development. However, a development project with local funding of SCr 30,000 was initiated in the fall of 197[illegible] and it is reminiscent of the IC proposal insofar that it aims at changing the social studies course towards theme studies. "With theme studies, we understand the abandonment of traditional subdivision between subjects" (quote from the grant request of June 14, 1976). The start of an international relations course in Stockholm proposed by the IC, may possibly—and at least indirectly—have stimulated this project. The course in international relations demonstrated that it was possible and acceptable to use a thematic, inter-disciplinary approach for undergraduate social studies. Nor is it totally impossible that ideas from the IC proposal for social studies may have lurked in the background of the change. In Stockholm, the prime motive seems to have been to attract new student groups.

According to the Stockholm proposal, the course of study will consist of the following five subcourses: Methods and theory in social sciences, with written assignment (10 points), economic theory as well as political and social ideas (10 points), decision making processes in groups and societies (5 points),

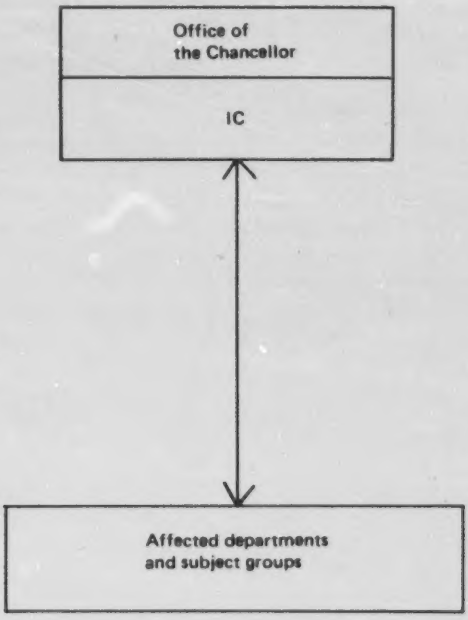
economic trends and policies of business conditions—action alternatives and social consequences (5 points), education and labor market (5 points), allocation problems and social inequities (5 points).

From the Chancellor's Office, no action has been taken.

(5) Analysis of the innovation process

(5.1) Interaction between systems

The picture of interaction between systems is extremely simple:



Within the Chancellor's Office (IC), a proposal is formulated as part of a report that is distributed for comment. In most cases, the affected departments and subject groups respond; reactions a4e positive in those responses that include comments on this specific proposal. The Chancellor's Office receives and summarizes the opinions, then formulates an action program where cases as the one studied here are included in general terms. Basically, this is all that happens.[1]

Within the Chancellor's Office, two subsystems have participated, the IC and the Education Department. Within the IC, the draft was regarded as a trial balloon. Great success was not expected, since the draft was potentially controversial in regard to disciplinary interests and to common scepticism against inter-disciplinary theme studies. Thus, the positive reactions came as a surprise.

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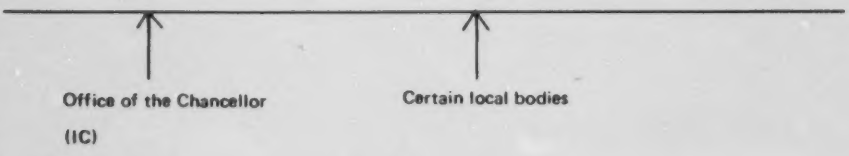
[1] When the first draft of this case study was read and commented on, several persons pointed out that we might have underestimated some vague influences from the IC proposal.

After the IC was dissolved, the case belonged with the Education Department. As part of our investigation of this case we raised the question within the Chancellor's Office regarding follow-up of the IC proposal: should the initiative come from the central or a local authority? Most responses have indicated that a "central push" would be needed in order for something to happen, even if, in principle, the local departments should take the initiative. There have been different explanations as to why a central initiative is never taken, e.g. that it was not clear who should have the responsibility to do so: the social sciences group within the Department or the officer who was assigned to watch the follow-up of the IC proposals. In any case, coordination was insufficient. The same obvious fragmenting of the bureaucracy within the Chancellor's Office appears here as in the previously discussed case of Eastern European studies. One may also refer to organizational confusion, due to changes in the responsibility situation.

The positive reaction from departments and department groups seems to have been relatively platonic in nature. There have been no driving forces to start experimental activities on local initiative. Only in Umeå was there even a serious discussion. There, the interest seems to have been demonstrated by the chairman of the Department group for civics and its director of studies. When these two persons leave the system, interest disappears. Another reason for the lack of action in Umeå has also been indicated, namely that the number of students decreased so drastically that the mere survival of the civics course was in doubt. This was no advantageous situation to start extensive work for a radical change.

The development in Stockholm is interesting. In spite of—or perhaps thanks to—a recent revision of the course, the university has started development work that follows the IC guidelines on theme orientation. But this is purely a local initiative, and only in a vague and indirect manner can it have been influenced by the IC proposal.

In the initial stage, the force field looks like this:



Later, the force field cannot be illustrated in any other way than this:

The force field is simply empty. There are no forces in favor of the innovation. Latent opposition forces are not manifested; there is nothing to oppose.

This development illustrates that if a change is to occur at all, a dominant vector sum in favor of the change must be in existence during the entire period before institutionalization of the change. The equilibrium is not moved by the fact that there is such a dominance in certain phases. When the dominance ceases, the process stops, and the equilibrium remains. No specific "obstacles" are necessary to prevent the implementation of the change.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal and external relations

Level of conflict/consonance: Neither level has been high.

Personnel changes: The personnel changes that took place in Umeå (see above) may have been the reason why the innovation was not institutionalized there.

Visibility: Initially, the innovation received a high degree of visibility due to the proposal included in the final IC report. After that, visibility disappeared rapidly.

Linkage: There has been no true linkage to external systems.

Correlation with external changes: The proposal is an expression of certain trends in the development of higher education: inter-disciplinary, theme- or problem-oriented, and internationalized studies.

(5.2.2) Analysis categories for decisive factors

Gain/loss: The satisfaction of being part of a scheme for better education may be regarded as a potential gain; this should normally have been noticeable in those persons who made a positive evaluation of inter-disciplinary and problem-oriented studies. The risk for conflict due to actual resource allocation between various disciplines may, concurrently, be regarded as a potential loss. Re-distribution of resources could cause gains or losses for various disciplines.

Ownership: The ownership obviously remained with the IC; when this project was finished, there was no subsystem for which ownership functioned as a driving force. True, some members of the IC and some administrative personnel remained within the higher education system, but their system positions were no longer such that they could be influential in this case.

A comparison can be made with the change to theme orientation that was introduced at the university of Stockholm. Persons who have had a possibility to influence the local design of this project are owners of this innovation.

Leadership: After the IC was dissolved, no innovation leaders appear. Those persons in Umeå who originally seemed as potential leaders lost their positions; first, this was caused by a change in the conditions for the existence of the course; later, they left their positions within the system.

Power: Since no major power was exercised in this case, the question is purely theoretical: where would the power to effect change have been placed? Probably, the Office of the Chancellor had such power vested in its ability to stimulate local interest and allow extra resources for development work. The centers of gravity in the local force fields may vary from institution to institution. The 'mother departments' have considerable power, and the power position of the department groups for civics is dependent on their relations to the mother departments.

(6) Summary

The case seems almost as a caricature of innovation attempts according to a center-periphery model and of public reform strategy. A proposal is presented without local basis; the proposal is sent out for comment; it is not followed up.

Inherent in the applied reform strategy was an expectation that local departments would adopt and implement the central idea. There has been insufficient knowledge of conditions for change, and one has not noted that local prerequisites for change did not exist: the gain/loss picture was unclear; there was no local ownership, nor any evident local leadership; and the power structure was fragmented and unclear.

What happened later in Stockholm on local initiative and with the support of local educational development funding forms an effective contrast to the center-periphery model.

IV. Environmental Studies Programme, University of Lund (1968–1976)

(1) Introduction

The innovation is the establishment and development of a specific organization for education, information, and investigative activites in environmental protection issues.

The case is an example of an organizational change that takes place in contrast to the common principles within the universities. Partly, the new activities coincide with those normally conducted by university departments, but in some respects, they are different. The innovation process gives many examples of the art of minimizing opposition when carrying out changes that are potentially controversial.

The undergraduate courses that are offered by the Environmental Studies programme (hereafter referred to as ESP) have later been added at other universities as well, but the organizational basis is unique for Lund.

(2) Base situation

Occasional environmental protection issues were treated within the framework of various disciplines, but specific courses or a more comprehensive course component did not exist, nor any specific organization for environmental studies within the university.

In the late 1960's, environmental problems gained increasing attention in the general debate.

(3) Description of the innovation

"The Environmental Studies Programme of Lund University and School of Technology" is listed in the university catalog under the heading "Other departments and institutes". The ESP has its special board, where the Rector of the university functions as chairman. There is also an executive committee consisting of persons A, B, and C. Teachers and other staff (among them A, B, and C) are associated with the organization.

There are no bylaws and no statutes, nor any department chairman; the leadership is exercised collectively by the executive committee. Annual activity reports are submitted.

During the academic year 1975–76, the activity comprised the following elements. Educational activities consisted of a 10 point course in environmen-

tal protection (several courses were offered), a course in ecology at the technological faculty, a 40-point course in occupational environment studies, participation in the psychologist training, a research training course. Further, there were seminars, service for answering questions from the public, regular information activities for the Ministry of Agriculture, compilation of a catalog covering reports on environmental protection research at the university of Lund. By assignment from the Secretariat for Future Studies, a futures study in the energy area is conducted with certain association to the ESP. International contacts are extensive.

The activities are mainly financed through grants for teacher resources (undergraduate courses), university funding for operational costs, and grants for various outside assignments.

(4) Description of the sequence of events

A visit to Lund by Hans Palmstierna* caused some students to discuss the need of "doing something" in the environmental protection area. Among these are A, research assistant in nuclear physics; B, amanuensis in zoology; and later C, a zoologist, secretary of a governmental committee on natural resources which is charged with formulating an opinion on environmental protection. 1967–68

The group contacts the deputy rector of the university, D (who became Rector in the fall semester of 1968). D is also the chairman of the "Kursverksamheten", an organization for adult education, loosely connected with the university. It is decided to offer a course on environmental protection issued through "Kursverksamheten" during the academic year 1968–69.

A plan for the course is designed. A written statement, signed, among others, by the deputy rector of the university, the dean of the technological faculty (E), the executive director of the Academy of Engineering Sciences, and a couple of directors from the Industrial Association, emphasizes the importance of "not splitting /the environmental studies/ according to traditional disciplines but treating the environmental issues as an entity. Thus, we are extremely satisfied to see individual students and teachers at Lund take this initiative."

"Kursverksamheten" arranges the course with a two semester (part-time) duration. 180 apply for admission; 50 participants are selected. The course starts on October 1. Financial support is given by the Ministry of Education, the Industrial Association, and a major insurance company. 1968–69

A memo, dated October 6 and signed by A and B, deals with "local research and instruction on environmental issues" and contains drafts for four major tasks of a "future organization": inter-disciplinary instruction, special courses, seminars, a catalog of research projects. It is suggested that an experimental environmental research program be started in Lund by July 1, 1969.

On November 15, a communication from the Rector's Offices of the Lund University and the School of Technology of Lund is addressed to heads of departments and professors, posing a number of questions regarding the activity in the environmental field. The communication is signed by the Rector of the University, D, and the dean of the faculty of engineering, E; it is authored by A and B, who are also appointed to compile the answers (a first, preliminary compilation is dated December 12).

* Well-known Swedish environmental expert.

In a communication to the faculties, dated December 3, the Rector's Offices (same signatures and authors) suggest the establishment of an environmental research program under a separate board, its tasks would be to organize instruction as well as to publish a project catalog and offer counseling. The faculties are also requested to select one member each to participate in a working group for planning common seminar activities.

On February 3, 1969, A, B, and Hans Palmstierna (examiner for the extra course) write to the Office of the Chancellor of the Universities, presenting a proposal for environmental studies at the universities according to following: (1) consideration within various subjects and courses; (2) a cross-disciplinary survey course for 10 points; (3) a more comprehensive, vocationally oriented course for 40 points; and (4) expert training on the graduate level. A proposed curriculum for 10 points is enclosed.

On February 27, the *konsistorium* decides to refer the question of instruction and research in the environmental field to the Rector's Office.

A communication of March 13 to the Government (signed by D and E, authored by A and B) outlines an exploratory implementation of an environmental research program at Lund University, to start on July 1, 1969, and to be organized as a freestanding unit under the *konsistorium* but with its own separate board. The activities are to consist of instruction, project catalog, and a seminar program. An appropriation of SCr 230,000 for the activities is requested. During a visit to Lund, the Minister of Education is personally approached by D and A.

Faculty responses to the memo (December 3) are presented in a meeting with the *konsistorium* on March 20. Generally, the responses are positive; however, a cautious scepticism is noted in the responses from the faculties for natural sciences and medicine. In the same meeting there is also—according to the minutes—"a report by the Rector on actions taken within the framework of the ESP of the university and the School of Technology," followed by the comment: "The *konsistorium* approved of actions taken."

The Chancellor's Office establishes a curriculum plan for a 10-point course and charges a task force with designing a curriculum plan for a 40-point course. Hans Palmstierna is chairman, C is one of the members; A and B participate as experts.

1969–70 July 24, 1969: The Government grants funds for courses in environmental studies.

September 8: The university receives SCr 129,000 from the Chancellor's Office for courses and project catalog.

September 18: The *konsistorium* decides to appoint a chairman and ten members for a "governing board for the ESP at Lund university". D is elected chairman, and C is one of the members. Later, A and B join as student representatives. Further, the *konsistorium* decides to grant SCr 5,000 out of university reserve funds for purposes of equipment purchases for the ESP.

Two 10-point courses are arranged with 150 participants in each (there were considerably more applicants than could be accommodated). Two editions of the project catalog are published. Some seminars are arranged; information service and other services are initiated.

October 20: The Chancellor's Office task force presents a proposal for a 40-

point course. A member of the group, the representative of the natural sciences faculty in the board of ESP, participates in a separate statement of principles.

April 19, 170: *The konsistorium* decides that, in principle, the operational costs of the ESP will be covered by operational funds at the discretion of the *konsistorium*. However, some funding for the 40-point course will come out of the operational funds of the natural sciences faculty as well.

The 40-point course is offered for the first time. Other activities continue according to previous guidelines; however, due to financial difficulties, only one seminar is arranged. 1970–71

No major changes in the activities, but the publishing is somewhat expanded, as are the external contacts, internationally as well as within the nation. 1971–72

No major changes in the activities. 1972–73

The activity expands, and coverage is widened to include e.g. regular information service for the Ministry of Agriculture. The 10-point course is introduced at the branch university in Växjö as well. Cooperative efforts are expanded to include a component in the psychologist training. C participates in a Chancellor's Office review of the 40-point course. New courses are planned, e.g. in occupational environment. International activities are expanded. 1973–74

The discussions regarding the proposed 40-point course in occupational environment become extremely controversial. Certain departments in the social sciences faculty actively oppose the offering of the course within the ESP. 1974–75

In October, 1974, the educational program committee of the faculty for natural sciences appoints a committee to evaluate the environmental courses, and the committee presents its report in May, 1975. The committee emphasizes its positive attitude towards the courses and lauds the work to create and maintain contacts within and outside the university, but it also expresses certain criticism of details and some suggestions.

May 29, 1975: In a memo to the *konsistorium*, the board of the ESP proposes statutes for the program and suggests the formation of a body of representatives.

Activities continue without major changes.

The 40-point course in occupational environment starts. Planning begins for a course in human ecology. Planning also starts for the organization and funding systems inherent in the upcoming reform of the higher education system—which causes insecurity and anxiety. 1975–76

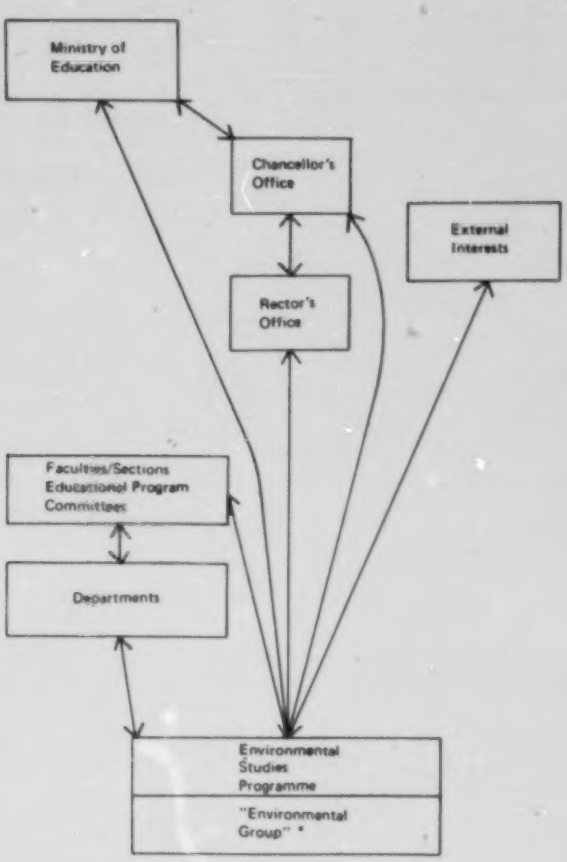
The proposed statutes are supported in their main parts by the faculty of theology and its educational program committee, by the humanities faculty and its educational program committee, by the faculty of law and its educational program committee, by the faculty of dentistry and its educational program committee, as well as by the technological faculty and its educational program committee. The faculty for social sciences and its program committee emphasize that linkage with research must be secured within the instructional program; this could be done by recruiting teachers in the program from the research staff of the respective departments and by requiring that teachers appointed expressly for the ESP must be active in department-affiliated research.

The request for a representative body is rejected, and it is suggested that the Rector not remain as *ex officio* chairman of the board. The faculty of medicine expresses general criticism of project groups of the type represented by the ESP, citing difficulties in balancing diverse requirements for resources and time. The faculty suggests that the *konsistorium* reexamine the issue of continued existence and design of the ESP without bias. The faculty for natural sciences and its educational program committee are of the opinion that the instruction proposal cannot be used as basis for a final decision. However, the dissenting opinion seems to be directed mainly against the technical design of the proposal.

(5) Analysis of the innovation process

(5.1) Interaction between systems

The interaction between systems can be illustrated with this figure:



* Refers to A, B, C, and other persons who were associated with this group on a more temporary basis.

The number of contact and cooperation paths to and from the ESP is remarkable in the systemic interaction; it is to be remembered that each one of the designations in the figure, i.e. external interests, faculties/sections, educational program committees, and departments includes a number of subsystems.

In the figure, the ESP designates an organization conducting an activity with specific purposes, having a board and an executive committee but no statutes and no manager. The real leadership of the program has been exercised by A, B, and C with the support of the University Rector (first D, later E). The original group of innovators consisted of A and B and a few other students. After A transferred to special research tasks assigned to the program, the leadership has been exercised by B and C. In addition, a few young instructors, among them the psychologist F, have joined the organization.

These students/graduate students/teachers have both created the ESP and characterized its continued development. The fact that they do not have formal research competency (i.e. doctorate) has been cited in some cases as a point of attack against the program. Others have expressed their admiration for the personal involvement and ability of the members in the group.

The Rector's Office is a complex system, and its center of gravity may shift between different parts of the office as different cases or situations arise. In this specific case, the designation the Rector's Office is foremost one for the Rector personally. Since the innovation involves various faculties/sections, the university as a whole is the primarily innovating system. As in other cases, the formal leader has a decisive role. In this case, the role has been unusually active.

As Deputy Rector at first and later as Rector, D was the person who guided the innovation from idea to institutionalizing. This was done in a tactically cautious way. Studying the chronological development, one gets the impression that even if the *konsistorium* makes the necessary formal decisions, it actually faces a *fait accompli*, since the necessary formal basis has been secured in advance within respective faculties and sections. There is no written record of a direct decision to create the ESP. The position of the *konsistorium* is expressed for the first time in the approval of the Rector's action (e.g. a petition to the Government, outlining the program and requesting funds for its activities) and later in the appointment of a board.

D's successor in office, E, had emerged as a supporter of the program from the very beginning, while he served as dean of the technological faculty. He also succeeded D as chairman for the ESP. There is no doubt that the personal involvement of the two Rectors and their position as chairman of the board have meant a vital protection of the program within the university.

Most faculties/sections and their educational program committees have passively supported the ESP. Especially notable are two faculties, which are particularly concerned with a major part of the program. One is the faculty of technology that has consistently supported the program (notice the importance of E). The other is the faculty of natural sciences. Here, the attitudes change from person to person and from department to department in relation to the diverse components in the program activities, but on the whole, the faculty has been supportive. Considering the potential conflict causes that are built into the system characteristics, it is actually surprising that relations have been so frictionless.

From the outset, the faculty of medicine was more critical than most. A clearly negative attitude within the faculty (though not in its educational program committee) is manifested after the start of the occupational environment course—one that touched the territory of the faculty—and the presenta-

tion of the proposed statutes. A similar attitude, and for similar reasons, can be observed in relations with the social sciences faculty (and its educational program committee).

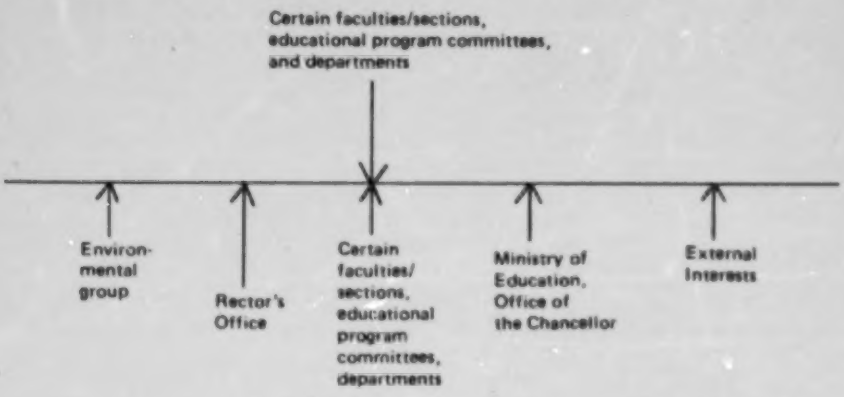
With the exception of information gathering for the project catalog, direct relations between the program and the departments have mainly been created through recruiting of teachers for the courses. Even if occasional frictions have occurred in this respect, there have been no serious conflicts.

Initially, both the Ministry of Education and the Office of the Chancellor have participated in the process; the Ministry by making special funding available for the first courses, the Office by legitimizing the courses by means of central curriculum plans. The courses were highly relevant to current general and educational interests: the environmental debate and the desire to create so called vocationally oriented courses.

The ESP has purposefully attempted to create liaisons with many external interests: educational organizations, the Ministry of Agriculture, Scandinavian and international organizations, etc. The manifest interests of these external contacts in the ESP have seemingly served as a legitimization of the program within the university.

The local educational development unit has not participated in the creation of the innovation, but later, there has been a certain cooperation in solving pedagogical problems.

The influences of various subsystems can be summarized in the following manner:


Certain faculties/sections, educational program committees, and departments
Environ-mental group
Rector's Office
Certain faculties/ sections, educational program committees, departments
Ministry of Education, Office of the Chancellor
External Interests

Basically, the innovation strategy has been to weaken resistance,[1] most of all by giving the innovation a harmless appearance and by avoiding any challenge to the interests of closely related subsystems (note the change of name from Environmental Research Program to Environmental Studies Program). Thus, a strong exertion of force in favor of the innovation has not been necessary. But the equilibrium is precarious. From the standpoint of the innovation, the current situation is slightly less advantageous than indicated in the figure, since the Ministry and the Chancellor's Office no longer can be regarded as parts of the force field. If pressure from the negatively oriented faculties increases to reach the symbolical value 3, and if the support of the Rector's Office ceases, the forces on either side of the line will be equivalent.

[1] According to Lewin, this is a good innovation strategy, since the level of conflict becomes lower than if the balance situation is changed by a unilateral reinforcement of the driving forces. Lewin, 1948, pp 217–220.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal and external relations

Level of conflict/consonance: In its totality, the level of conflict must be regarded as low; as previously mentioned, there has been a conscious desire to keep it that way. Towards the end of the innovation process (the stages we studied), the level of conflict is rising in conjunction with (a) the start-up of a course in occupational environment and (b) by the proposal for organisational statutes for the organization. These occurrences manifest an expansion into new territories and a permanenting of the organization, and each of them as well as both of them together are seen as a threat to certain system interests.

Personnel changes: The only personnel change is that some young graduate students—A, B, and C—emerge from separate positions in other subsystems to function as a close group of innovators and leaders. It can be said that they create a new subsystem of their own.

Visibility: The visibility has a double image. Outwardly, the ESP has worked for remarkably high visibility. It should be seen as a major, important, and urgent cause. There was a desire to attract external support, assignments, money, and students. Inwardly, towards the university, the efforts had an opposite character: a decrease of the visibility. The program did not want to be seen as a threat that would arouse opposition. The name is an illustration of the case in point: it is an organization, but it is called simply a "programme".

If the ESP is seen as a lamp, then the side towards the outside has been constantly polished and kept shiny, while the side towards the university has been opaqued and in critical situations covered with an additional coat of paint.

Linkage: There is a strong desire for linkage to external interests. The type of these external contacts shifts during the course of the innovation process: first "Kursverksamheten", the Ministry of Education, the Chancellor's Office, the Industrial Association, a large insurance company, the local Chamber of Commerce, etc., later other ministries, Scandinavian and international organizations, etc. Internal linkage can be found mainly with the key person, the Rector of the university. However, a broad range of formal associations has also been attempted—witness that all faculties are represented in the board.

Correlations with external changes: The innovation is an internal manifestation of the emerging environmental debate. As this debate is intensified, a need is created for higher education and research (also of inter-disciplinary character) in the environmental field.

Another external factor of importance is the trend towards problem oriented and inter-disciplinary studies *per se*. The environmental field is one where education structured in this manner seems very natural.

The innovation could also ride the crest of a general trend in educational policy: the desire for vocationally oriented courses. The Delegation for Vocationally Oriented Courses, which had been created within the Chancellor's Office, and especially the bureaucracy associated with this delegation, were frantically searching for suitable ideas for such courses (cf case study II). The initiative in Lund was received as if it had been made to order.

(5.2.2) Analysis categories for decisive factors

Gain/loss: The desire to make an active contribution in the environmental field

has been an important initial enticement for the driving participants. In addition, the two Rectors have probably desired to enhance the reputation of their university in this field.

A couple of the major innovation leaders have been employed in the ESP. For them, the innovation has meant advantages of economical nature as well as professional advancement. Now, the innovation gives security/stability both to them and to others who are financially affiliated with the program. For these persons, guarding the security/stability of the subsystem also means a protection of their own personal security.

The innovation has meant losses for other subsystems insofar that the ESP courses could have been offered by other departments, giving more advantages to these departments and their members. No real conflict occurred, however, until the occupational environment course was offered. At that time, the faculty of social sciences, especially the sociology department and its chairman, emerged as opponents.

This course can also be regarded as a threat against the dominant system structure and its ideology, namely that higher education and research shall be organized according to scientific disciplines. However, ideologists may be more or less 'hard'. Some may accept the existence of a dominant organization determined by its disciplines but coexisting with a less important, problem oriented organization in a peaceful symbiosis with the dominant ideology. Another standpoint is clearly expressed in the opinion of the faculty of medicine on the proposed statutes. Disregarding the ideological variant in principle, this position is naturally firmed when the interests of a department are concretely affected, as was the case in the conflict with the sociology department regarding the occupational environment course.

Ownership: A, B, and C naturally have a strong feeling of ownership, but this holds true also for D and E. The level of ownership among the board members may be questioned (they belong to various faculties) and among those who have been or are engaged as instructors for the courses offered by the program. We cannot determine this level of ownership, since our interviews have not covered all these persons.

Leadership: The importance of leadership is unusually evident in this innovation process.

Since the innovation involves the entire university, the Rector is the formal leader of the innovating system. His position is always decisive (according to our case studies), but in this case, an unusually strong activity has been required by the two Rectors in office during the innovation process. Basically—and this is probably often the characteristic of the role and action of the formal leader—this activity has aimed at decreasing the strength of the opposing forces.

In the initial phase of the innovation process, A and B are the primary leaders, later B and C, and, to some extent, F. Notable elements of leadership are involvement in the problems, tactical talent and maneuvering skills as well as a political sensitivity in engaging external interests and in taking advantage of current trends.

While the primary group is clearly limited and easy to identify, it is difficult to distinguish secondary leaders.

It is possible to identify clear opponents of the ESP. However, since there was no continuous, organized resistance to the ESP *per se*, it is not possible to distinguish any opposition leaders. One can speak of opposition leaders only in relation to a specific issue and for a limited period of time, e.g. when the occupational environment course was discussed.

Power: The Rector personally represents the power that made the innovation possible. This case is thus a new illustration of the power that a university Rector can exercise if he so desires.

One could pose some intriguing questions: what would happen if a few important departments in two or three faculties managed to mobilize the faculties to intensified opposition against the ESP? What further power would the Rector be able to exercise, personally, and/or by mobilizing other faculties in order to maintain the dominance by the driving forces? Or, what would happen if a personnel change occurred and the Rector's support disappeared at the same time as a mobilization of opposing forces took place?

In addition to the Rector's power, the financial power of the Ministry of Education and the Chancellor's Office as well as the formal power of the Office to establish new central curriculum plans have together been of great importance. External power components were mobilized as well: the Industrial Association, the insurance company, etc.

(6) Summary

The innovation is an example of an organizational technique to translate new external ideological trends into university activities. This technique led to the creation of a problem oriented organization (as opposed to a discipline oriented one). The technique could have led to difficult controversies, since it threatened the existing system both in principle and in practice.

Nevertheless, the conflicts have been limited, both in content and in time. The innovation process has been characterized by its efforts to keep the level of conflict low by avoiding opposition as far as possible.

This has meant that while high external visibility was desired in order to get support and resources, the interior visibility was kept low.

V. Architecture, Chalmers Technological Institute (1971–1975)

(1) Introduction

The innovation is a change of the architectural education from a subject-oriented, course-bound program of study to a basically problem oriented and project-structured one. The change affects the entire four-year program and touches on goal orientation as well as on content and instructional methods. Trends in the same direction are also noticeable at other architectural institutions in the nation, but nowhere have their effects been as extensive as at Chalmers in Gothenburg.

(2) Base situation

The general radicalization among the students in the late 1960's touched Chalmers as well. There, it was mainly directed towards the lack of student participation and influence on education and against authoritative teaching methods as well as the lack of societal perspective in the program. The students in the so called A-section (architecture) were no longer satisfied to design a town hall or a residential development; they wanted to understand the conditions of building, the relations between man and environment, and the steering systems of construction projects. At the same time, the labor market outlook for architects deteriorated.

The old study plan was built around four major subjects: house construction, form and design, town planning, and architecture. These major subjects were areas of concentration for one year each of the four years of study. A number of minor subjects were included in these majors: theory and history of architecture, construction planning and residential planning, design, house construction, project methodology, development planning, drawing, painting and sculpture, traffic planning, and other less extensive courses.

The study program consisted of a fixed number of mandatory and elective examination subjects; it was structured as separate courses included under the umbrellas of the four majors. The instruction was scheduled in a precise

manner and divided into four study periods each year. A weekly schedule for the students could contain the following:

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	Residential planning	Construction theory	Project methodology	Construction theory	Acoustics
Afternoon	Drawing and painting	Construction theory	Project methodology	Construction theory	House building

The educational program concluded with examination work that contained one semester of project or planning work.

As an organization, the architectural section consists of four departments: material handling and design, house construction, architecture, and town development. The departments, in turn, are divided into groups. Construction theory is included under another section, that for civil engineering.

The executive branch of the section is the sectional board, which makes decisions on education-related issues as well as on administration and finances. This sectional board also functions as educational program committee.

Section board

Architecture	*Material handling and design*	*House construction*	*Town development*	*Civil Engineering*
Theory and history of architecture	Design	House construc-tion	Town planning	Construction theory
Residential planning	Drawing, painting, and sculpture	Project methodo-logy	Traffic planning	
Construction planning				

(3) Description of the innovation

The focus of our interest is a change in the educational program from the previous subject-oriented four-year period with a concluding examination work to the following model:

Educational Plan CTI – A

First year	Project work on the following themes: image and reality urban and rural areas house and technology architecture and society
Second year	Project work: residences and work areas Planning theory: projects construction town building design
Third year	Elective courses and projects
Fourth year	Elective courses and projects

The first year is structured as four projects on given themes. These themes are selected to illustrate central issues in architecture and society.

During the first year, instruction is given mainly in groups of about 15 students each. During the year, each group is under the supervision of a lecturer and an assistant. Each lecturer has the main responsibility for one of the four themes (rotating between the groups) and examines the students in this specific area. Instructors from other sections and guest lecturers from outside the institution participate in instruction as needed.

The decision on project selection within a theme area is jointly made by students and teachers. Actual project work starts after the first year. During the second year, two projects are to be completed, or they may be integrated into one within the overall theme of residences and work areas. Four courses are also included in this year's activities, aimed at illuminating project planning, design, construction, and town building in more general terms. During the third and fourth years, the students have a free choice of projects and courses. Students in the third and fourth years of their programs may participate in the same projects and attend the same courses.

Inherent in the project model is that

1 the content of the studies is determined in accordance with the task selected by the project group;

2 the project group forms a unit with certain time and certain financial resources available. This makes it possible to create contacts outside the institution, to travel, and to work in other locations;

3 the project group is an entity that plans, organizes, and completes the task;

4 the task of the teacher is mainly to advise, plant ideas, etc.

About 75 % of the total study time is taken up by project work.

Another way of describing the difference between the old and the new study program may be to use the terms atomistic and holistic perspectives. The atomistic perspective is expressed in the old curriculum, where the four years of study were divided between subjects that, in isolation, directed instruction towards the goals that had been defined for each subject. In order to be as efficient as possible, it was necessary to reject certain aspects that did not fall within the framework of the subject responsibility. Subject study followed on subject study, which meant that one subject was studied during a certain phase of the program and did not occur again. The holistic perspective starts out from a concept of an entity, and all studies are constantly related to this entity. For the educational program, this perspective means that 'problems' form the basis, that all departments or groups are involved during the entire course of study, and that similar issues continuously reoccur and are more intensively dealt with.

(4) Description of the sequence of events

1971–72

Many of the teaching assistants in the section are former students who have participated actively in the discussions of educational structure in their field and of the role of the architect—most intensively in 1968. Most of them have a common denominator in the graduate seminars of professor Elias Cornell. In these seminars, the basis for discussions had long been a holistic standpoint and an emphasis on the societal perspective on the architect's role.

Several professorships in major subjects are vacant. Many of the vacancies are filled by young teachers with a fresh view of the architect's profession.

Discussions on educational issues are held in informal groups. The most intensive discussions seem to be animated by a few assistants who still remember their own education and who have contacts with the Academy of Arts in Copenhagen, where the educational program has been radically changed. This group is no isolated fraction in opposition to the rest of the institution; rather, the feeling is prevalent that reform is necessary. Among the students as well, lively discussions and activity belong to the order of the day. However, there is a lack of concrete ideas and alternatives.

The fourth year students initiate a restructuring of their program. The previous linear division between house construction, town planning, and space planning is replaced with theme-oriented projects.

First, the section board appoints a task force for long range educational issues. Later, another group is appointed to handle organizational issues and is charged with presenting a proposal for a 'macro-department'.

The task force on educational issues, consisting of three teachers and three students, is basically a formalization of an already existing, informal group with mainly similar views on educational issues. Thoughts of inter-disciplinary and problem-oriented approaches are developed within the group.

1972–73

A new dean, A, is appointed. He has previous experience of administrative work and reacts to the lack of organization within the section. To a great extent, the groups within it have developed their own administrative routines, and the interest in common issues is minimal. There is a lack of procedures for handling common issues on the section level.

Certain conflicts emerge between the task forces for educational and for organizational issues. A proposal from the organization group meets with resistance and a counterproposal from the education group. Both proposals are discussed within both groups, but a common standpoint is not achieved. The question of reorganization is held in abeyance pending the transformation of education.

1973–74 During the summer, the section has received funds for a part time position as educational secretary. An assistant, B, member of the task force on educational issues, applies for the position and is appointed. A partial change in the composition of the task force on educational issues takes place, and B becomes the secretary of the group. The group presents a proposal regarding goal definition for the architectural education program and for a change-over to project-organized structure.

The following principles are expressed in the proposal:

- problem oriented studies in response to the demand for a holistic approach;
- fine-tuning of theory and practice;
- freedom in choice of specialization and problem selection;
- student influence;
- increased personal responsibility for study results;
- increased concentration of studies;
- independence and individual initiative in the planning of individual work;
- small working groups.

The proposal is sent out for comment, and there is considerable consent to its general formulation. A representative for the central administration of Chalmers is invited to a discussion and raises no objections to the ideas presented.

The section board makes a decision in principle on a change of the educational program according to the guidelines that have been presented.

According to this decision by the section board, the new program is to be implemented in the fall of 1974. Preparation work starts under heavy time pressure. Concrete plans are developed. A number of teacher conferences are held, funded from educational development resources.

The new program is implemented for first-year students. Teachers and students are involved and generally positive, but some criticism is also heard. Teachers and students make joint decisions on project selection and on cooperation within as well as between project groups. The process is found to be both demanding and time-consuming.

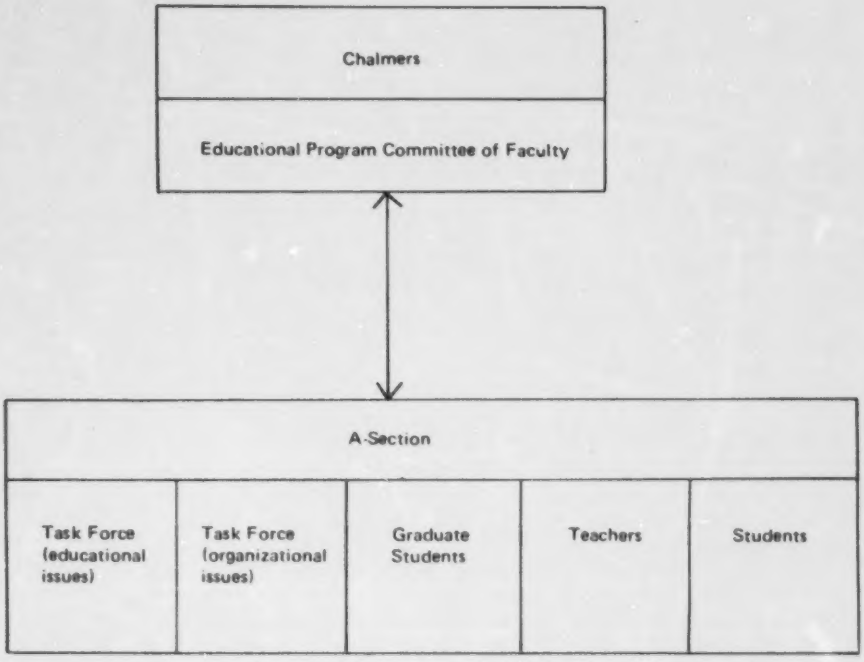
1974–75 The new educational plan is introduced for second-year students as well. Still, reaction from students and teachers is mainly positive. Some students demand lectures and courses. Teachers, especially in technological subjects, are anxious that they may be losing territory and not be involved in the projects.

It becomes apparent that the teachers lack experience in their new role as advisors. There are difficulties in calculating the extent of actual teaching time. There are also difficulties in grading. Contact is initiated with other sections of

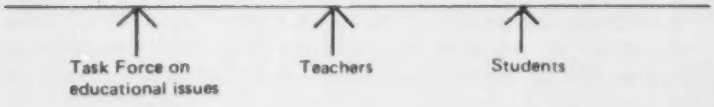
architecture, with the Chalmers' administration, with the Office of the Chancellor, and with the Ministry of Education in order to be exempted from the existing grading system in project work. No firm directions are given. Informal solutions are found and applied.

(5) Analysis of the innovation process

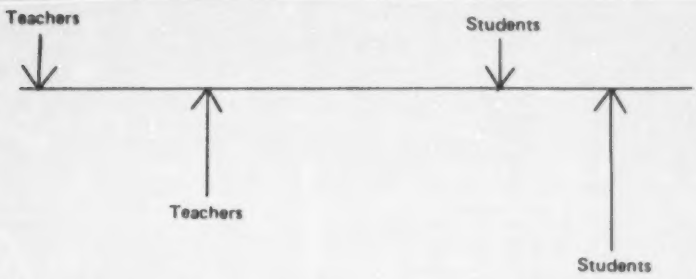
(5.1) Interaction between systems



In regard to the force field, two phases may be distinguished in the innovation process. In the initial stage of the process, it is generally a walk over an empty field—teacher vacancies, other changes in the teaching staff, no firm administrative organization, no forum for opposition. There is general support for the fundamental pedagogical ideas behind the innovation.



When the policy decision has been made and the implementation of the change-over has been initiated, conflicts emerge that had previously not been visible, and the force field may be illustrated in the following manner:



Naturally, there were those who were sceptics from the beginning. As the change was established, the criticism could be formulated in terms of concrete difficulties, e.g. redistribution of teaching hours for project work, difficulties to attract sufficient attention to specific subjects, etc.

All the time, students have been a driving force in the process. However, even if the dominant student force is working in favor of the change, a certain splintering within the group can be noticed.

It is obvious that very little real interaction has taken place between the A-section and systems outside the section. The contacts with the Rector's Office and the overall administration of Chalmers have been few and formal. Insofar that they have existed at all, the attitudes towards the A-section has been described as mildly condescending. Traditionally, the architects are regarded as deviant from the standards of the technological institution. They are tolerated, and a development that would have met with more attention and possibly also more resistance had it occurred in another section, is accepted for the A-section.

Active participants have pointed out the lack of reactions from Chalmers as well as from the Chancellor's Office, and it is also obvious that the risks for opposition from superordinate authorities was considerably overestimated in the initial phase.

Thus, the primarily innovating system has been the A-section. Within this system, several subsystems have been active over time. The most important subsystem in relation to the innovation process has been the task force on educational issues. After having had informal status, the group gained a new position within the system when it was formalized in 1972.

This does not mean that the educational task force has been the only driving force for the innovation ideas. The ideas were formed and developed in various contexts, in various groups, at various points in time.

The appointment of the educational task force must therefore be seen as an affirmation of a relatively extensive and radical movement. Through his position as secretary of the task force, B gained a system position from which he could act and influence the section. Otherwise, the section demonstrates a pattern of fractioned and broken communications. The various groups have formed their own systems with their own rules and routines. This has meant that the power mobilized by the educational task force has met very little resistance—it was the only system that was oriented towards actions that in-

volved the entire section. Formally, the section board was the executive body for common issues, but during most of the time required for the innovation process, this board was too divided internally to function as a coherent system.

Certain temporary systems have existed during the course of the process. So, for instance, the fourth year students can be regarded as a subsystem by themselves, changing the conditions of their student existence. The success of this student group and its positive experiences became very important in the implementation of the changes for the entire architectural program. At first, the task force on organizational issues was a distinguishable system, the power of which opposed that of the task force on educational issues. This conflict had a restraining effect on the innovation process.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal and external relations

Level of conflict/consonance: The level of conflict has been low throughout the process. One explanation is relatively wide agreement on its principles in combination with vacancies in key positions during the critical period. It is nevertheless important to note that the resistance to the change has increased after the implementation. The innovation has become a threat to the territories of certain subjects, and other subjects have even faced the risk of being eliminated.

Personnel changes: Personnel changes have had some importance in this case. There were vacancies in professorships in key subjects, and there were positional changes for individual persons, notably A's appointment as dean and B's appointment as secretary of the task force for educational issues.

Visibility: The lack of visibility for the A-section within Chalmers has been crucial. The innovation has been protected by the marginality of the section, which made the risk for diffusion effects limited.

In Sweden, this innovation is a unique experiment with project oriented education, but except for other architectural sections in the nation, it has aroused surprisingly little attention in the higher education field.

Linkage: Through individuals and groups, the A-section has a diversity of contacts with external systems. The linkage to Danish architectural schools is important. Study visits by teachers and students were very influential for the change-over of the educational program. Contacts with action groups on issues related to residential environment and new town planning have also been important.

Correlation with external changes: The innovation bears a clear correlation with the general radicalization and student activism of the late 1960's. Another external connection is the labor market situation for architects. The decreasing availability of attractive positions has made it necessary to discuss a widening of the professional role of the architect. It has also resulted in making teaching positions in the A-section increasingly attractive. The involvement in the educational issues has increased, and it has been possible to make more stringent requirements on teacher cooperation in educational questions.

(5.2.2) Analysis categories for decisive factors

Gain/loss: For most participants, the gain motive has been a desire to implement improvements, to see their own ideas translated into practice. A wanted

to make the section function smoothly. By becoming task force secretary, B gained, in fact, one of the strongest positions within the section. It is not possible to judge whether this has been an action motive. For some teachers, there has been a loss of time for their own subjects as well as a loss of security in their teacher roles. For teachers with strong roots in the traditional view of the architect's role, the innovation has been an ideological loss, equivalent to a corresponding gain for others. There has also been a material loss factor: teacher hours for project work have mostly exceeded budget allowances.

Ownership: From the beginning, there has been a widespread feeling of ownership within the section. It seemed to us as if there was almost a competition for ownership among members of the subsystem that served as forum for discussions on education and society before 1972. Ideas emerged and were developed through a collective process within a group of teachers, graduate and undergraduate students—all co-owners of the innovation—whereas during the implementation period, the administrative functions have taken precedence, and B's personal ownership has been reinforced.

Those students who were the first ones to follow the new curriculum naturally have no basis for a comparison with the previous system. In keeping with the nature of student collectives, ownership in an educational change cannot be transferred across "generations". Protests and criticism are directed towards the current, established curriculum. This is a kind of dialectic development process, where the original innovators come to be regarded as obstacles for change, and the new students lack ownership in the innovation.

The administrative/technical implementation of the change had to take place under strong deadline pressure. Consequently, many issues had to be rapidly handled, and there was no time for all persons involved in the process to penetrate all issues thoroughly.

Thus, while the ideological ownership is widely spread, the administrative ownership is less diffused and is foremost concentrated in B.

Leadership: A has had the formal leadership of the innovating system, the A-section. In force of his authority as dean, he has been able to protect the section within Chalmers. It is difficult to evaluate his active role in the change process, but as in many other cases, it is possible to state that the change would hardly have been implemented against the wishes of the formal leader. He has functioned as a legitimator of the innovation.

Since the innovation process has been highly collective, it is difficult to point out any one specific person as an innovation leader. During the implementation phase, however, B must be designated as the innovation leader.

Power: Originally, the power over the educational program was divided, and hard to identify. Further, due to several vacancies, the potential power of the subject representatives was absent. As the position of educational secretary was created and thoughts of a 'macro-department' emerged, a possibility appeared for coordinated power through 'proper channels'. Or, so it must have been experienced in the various groups and departments. And this becomes a very real threat. Time is also a power factor that must be indicated. Through his appointment, B had time available and could use it as a power factor: time to become knowledgeable of various issues, time to exercise influence, time to formulate policy.

(6) Summary

According to Kurt Lewin, a good innovation strategy will ultimately aim at

decreasing the opposing forces rather than merely increasing the driving forces.

In this case we can see how the driving forces initially affected field with no opposing forces. The change could be implemented without identifiable resistance. However, when the decision to change had been made and the implementation had been initiated, conflicts emerge and create problems in the institutionalization of the innovation.

Perhaps the struggle for institutionalization is not yet over.

VI. Systematic Anatomy, Caroline Institute of Medicine, Stockholm (1973–1976)

(1) Introduction

The Systematic Anatomy course (hereafter called the SA course) is a two week introductory course to the formal studies of anatomy for future MD's in training at the Caroline Institute. The course is to be taken during the first semester of studies, and it was created in conjunction with a restructuring of the three first years of study. This restructuring was caused by a review of the program which was presented in October, 1971, by a task force assigned by the Office of the Chancellor of the Swedish Universities.

The innovation is to be found in a different pedagogical model. In regard to teaching methods, it is a definite breach with methods used in other parts of the anatomy program and also generally within the entire pre-clinical portion of medical education.

(2) Base situation

The most important base point for the emergence of the SA course was a reduction of the anatomy course from 23 to 18 weeks, caused by the proposal to restructure the first three years of medical school. This reduction in combination with a move of the main anatomy course from the first to the second semester made it necessary to design a short, introductory anatomy course—specifically to make it possible for students to understand the histological and cell biological material to be covered during the first semester.

In anatomy, as well as in other pre-clinical subjects, the dominant instructional method has been lectures, in combination with dissections, laboratory practice, etc. The task force for revision of the first three years of medical studies comments (1971) on anatomy instruction that those suggestions presented in the medical education committee of 1948 had hardly, or only to a limited extent, been implemented. The suggestions referred to aimed at "slightly reducing the number of lectures of traditional nature, reducing the number of demonstrations, and not allowing time for dissection of the human body to increase by requiring unnecessary detail."

(3) Description of the innovation

Traditionally, students have experienced anatomy as rote memorization of an enormous list of names. Critics speak of "name anatomy" as opposed to "functional anatomy", where function is the central issue and the parts and

their names are placed in a context. The contents of the SA course are built on a functional view of anatomy, i.e. the instruction centers on one area at a time, e.g. the kinestetic system, its components, and its functions.

The primary innovation in the SA course is to be found in teaching methods. Student activity is central to the course, and the teacher functions as advisor and resource person. Each section of the SA course is introduced with a short presentation of available instructional materials and aids, such as models, literature, mimeographed sheets, etc. Usually, mimeographed questions are distributed by the teachers. During the rest of the day, the students work in groups of five or six with this particular material. If questions arise during the day, they are written down and deposited in a special question box. An assistant is available to the groups. Towards the end of the day, time is set aside for a lecture on the material prepared, and the entire lecture is built around the questions that have been written down by the students. There have been certain minor changes in this pattern, but basically, the SA course has followed this model from the beginning.

(4) Description of the sequence of events

1972–73

Due to the suggestion by the previously mentioned task force to restructure the three first years of medical studies, the Chancellor's Office writes to the Rector's Office and states guidelines for certain experimental activities, e.g. regarding the quantity and nature of subject matter to be covered in the first three years. The educational program committees are requested to appoint within themselves a special group for experimental activity and to submit drafts for curriculum plans covering the first three years to the Chancellor's Office for approval. The Office recommends that the educational program committees be given opportunity to test different alternatives. The guidelines from the Office indicate 13–17 weeks as a desirable extent of the anatomy course.

At the Caroline Institute, a "think tank" is appointed during the fall semester in order to prepare the issue of the "first three years". The chairman of the anatomy department is a member of this group.

During the spring semester, the group presents a draft to the educational program committee as a basis for further discussion. This is the first time a preparatory course in systematic anatomy is mentioned.

The educational program committee decides to appoint a separate committee for experimental activities to discuss the first three years of study, as well as a subgroup for each subject. The chairman of the anatomy department is a member of the committee.

1973–74

The committee on experimental activities presents a suggestion for a new curriculum plan. The suggestion includes a reduction of the time for anatomy from 23 to 18 weeks. The committee further recommends an introductory course in systematic anatomy–two weeks–to be scheduled for the first semester.

In May, 1974, a teacher conference is held in the department of anatomy, and structure and planning for the SA course are among the topics to be discussed. During the meeting, a plan is presented which has been designed by an assistant, A, but is presented in her absence by B, director of studies. B and A have previously cooperated in a restructuring of laboratory practice in X-ray anatomy and have similar educational philosophies.

The pedagogical structure of the suggested course is somewhat hesitantly received by the conference, but since there are no alternative suggestions, since the presentation has been made in a cautious manner, and since the chairman is supporting it, the proposal is accepted, and A and B are given the authority to test it.

1974–75 The SA course is offered for the first time. A and B share the lecture load, and teachers who are positive to the idea have been hand picked as group leaders.

Simultaneously, there are several other changes in the medical program. Of special interest is an introductory course with elements of field work and medical psychology, under A's leadership.

The test results from the SA course are very satisfactory, and the evaluation made by A indicates a very strong positive response from the students. Opposition grows within the department. The course is criticized for giving too little knowledge, "badly utilized time... more of a playground than learning". Several of the teachers experience the pedagogical structure as an attack against the lecture as an instructional method. During the spring semester, criticism becomes more frequently expressed. The department chairman, C, intervenes on one occasion to mediate between A and one of the teachers in the department.

B and C agree to attempt to soften the conflict. The strategy is to involve critics in the SA instruction and thus decrease the resistance to the innovation.

1975–76 Chairman C is on sabbatical leave, and the deputy chairman takes his place.

B leaves the rotating position as director of studies.

One of the most ardent opponents, D, is recruited as a teacher for the course. He abandons the structure, adds more lectures, and presents more difficult material than originally planned. This results in protests from the students. They complain to A, who tries to make them talk to D. At the same time, a technical change has been made in the scheduling, so that the SA course has been extended in time and runs parallel with another course. The effect is that the pedagogical structure becomes unclear. There is no direct contact between A and D until arranged by the director of studies for the year.

During the spring semester, the course structure is brought back to the original design. The critical teacher is no longer engaged in the course, the course leadership has been given to E, who is very positive to the pedagogical ideas. Again, the course becomes a great success with the students. The design of the SA course seems to be well institutionalized.

Pedagogical work days for the department are carried out in cooperation with the educational development unit. During these days, a special group is formed to determine whether the principles of the SA course might be applicable for part of the major anatomy course.

1976–77 During the fall semester, an experimental restructuring is made of the component of the larger anatomy course that deals with the arm. Instruction adheres to the same principles as the SA course, i.e. first reading and active work by the students on the material, then one or more lectures to follow up and summarize. This must be regarded as a diffusion effect of the SA course.

(5) Analysis of the innovation process

(5.1) Interaction between systems

The department of anatomy has been the primarily innovating subsystem. The group of participants who have advanced the issue and who have been primarily involved may be said to form a subsystem by themselves within the department. The most important participants have been assistant A, and director of studies, B, with the support of chairman C. The members of the department may be divided into three groups: (a) clearly positive, namely, in addition to A and B also E, who later became the course leader; (b) indifferent and non-involved persons; and (c) a group of opponents. However, there was never an open, organized opposition to the SA course.

By legitimizing experimental activities, the educational program committee has given indirect support to the project.

Indirectly, the Chancellor's Office has been of importance for the innovation process by giving its approval of experimental activities and alternative structures. Thus, the Office has created a climate where change is not only allowed but even desirable.

The educational development committee has been of certain importance. It has actively supported the pedagogical ideas embodied in the SA course, and has also maintained informal contacts with the main participants. From fall semester, 1975, director of studies B functioned as chairman of the committee. C has been a member of this body since its formation in 1972 and up to his sabbatical leave 1975. We have heard the opinion that the educational development unit is actually the driving force behind the SA course, its pedagogical structure, and later also the change in the "arm component". This is obviously not true.

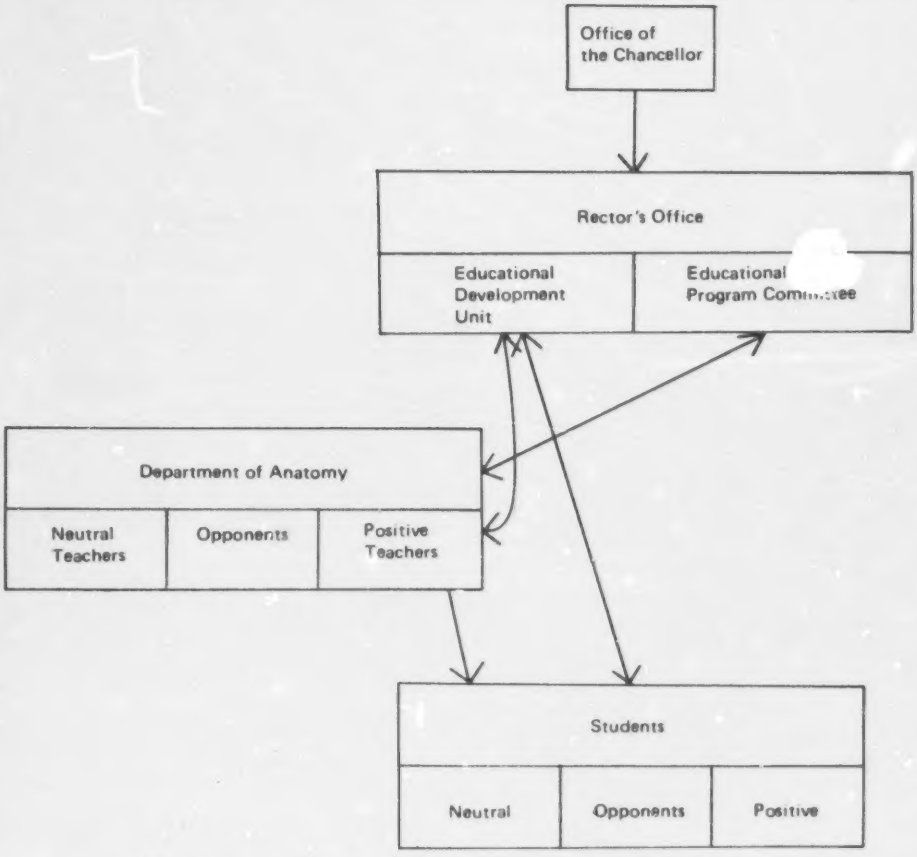
In such an extensive study program as the medical one, students can form a very strong pressure group. They have their professional goals in common, they share experiences during their educational program, and they become a closely knit group. We have been told that one can notice a marked change in the student groups since the late 1960's. They are more critical and tend to question the contents and structure of their educational program more than was previously the case.

In our interviews, we have had the impression that there is a correlation between the interest in change of instructional methods towards increased student activity and, on the other hand, an interest in changing the medical education towards "more man and less science".

Among the students, there have been conflicts similar to those found within the academic staff. Active students have been clearly in favor of the SA course, whereas the opposition has not been organized.

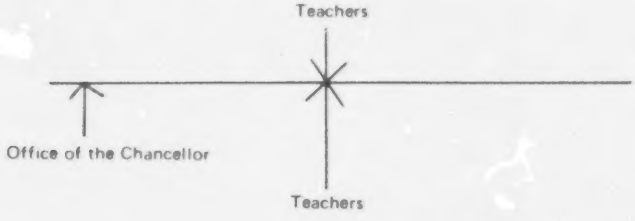
We have limited our discussion to cover the development from fall 1973 until fall 1976, when the current structure of the SA course seemed to be well institutionalized. However, we have heard fears expressed that the traditional methods would be reintroduced if any one of the major participants left the department. The departure of even one person would cause a shift in the balance of power.

The interaction between subsystems is illustrated in the figure on the following page.

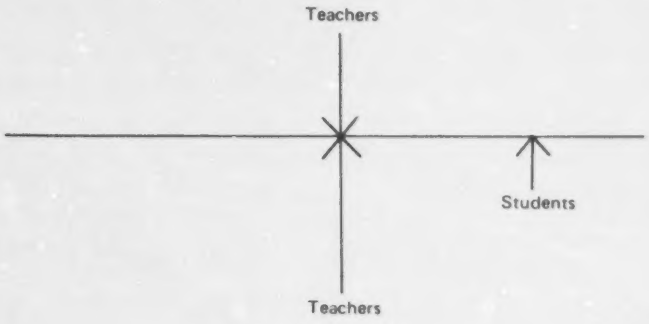


The effects of various subsystems can be illustrated for various phases of the innovation process.

At the time the initial decision was made regarding the structure of the SA course, the forces were



As the course started and was successful, the opposition increased. The formal power, i.e. department leadership, is still on the driving side.



By including more teachers in the course work, the majority were retained on the side of change. Student pressure increased.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal relations

The SA course is the only case where we had difficulties in gaining access to the material. Considerable time elapsed from our first contact with the department until we had made appointments for interviews. There may be several explanations for this. One possible reason may be that the intradepartmental innovation has been so full of conflict that there was resistance to having internal controversies revealed to outsiders.

Level of conflict/consonance: We have found that certain persons describe the innovation process as full of conflicts, whereas others have said that it was implemented without difficulty, as a necessary adjustment to a current situation: there was a need to find instructional methods that could motivate students without a strong interest in natural sciences, specifically anatomy. The opinions on the level of conflict seem to bear a certain correlation to how the SA course is seen—whether it is regarded as an isolated experiment, slightly ridiculous but insignificant; or if it has been seen as a more radical change.

The proponents of the course are the ones who have found it most full of conflict. They do not see the conflicts as limited to the SA course; rather, the course becomes a "battlefield" for opposing views that are deeply rooted in conceptions of the structure of the subject of anatomy, and, on a larger scale, the goals for medical education.

The innovation strategy has been to decrease resistance by a cautious initial presentation and later, by a successive involvement of more teachers in the course. This strategy has limited the conflicts.

Personnel changes: There have been no dramatic personnel changes of importance for the innovation process. However, one fact that might have influenced the disciplinary and scientific profile of the department is that its only full professorship has been vacant since 1971.

A's position as program leader for the introductory course during the first semester has strengthened her overall position in relation to the SA course.

(5.2.2) Descriptive categories for external relations

Visibility: The SA course is the most elementary part of the entire anatomy program. Its importance from a disciplinary point of view is minimal. It has only a peripheral position in the total study of anatomy.

At the time when the first SA course was offered, the implications of its pedagogical structure were unclear to most staff members in the department. The presentation to the teacher conference had been cautious in tone, and "most people probably didn't understand what it was all about". The course gained news value for its success: the satisfactory test results were reported within the department and to the educational program committee, and the course evaluations were printed and disseminated. Some experienced this as a threat. Resistance grew.

Linkage: The SA course is an intradepartmental innovation. It bears no relation to any corresponding course structure in any other medical faculty. It is clearly linked to the introductory course which has been personified with A's leadership.

The linkage to experimental activities initiated by the Chancellor's Office is obvious. Mention should also be made of the linkage to the educational development unit and the educational development activities.

Correlation with external changes: One correlation is difficult to document, but we nevertheless believe that it exists: namely with the general debate of medical care during the 60's and 70's. Issues that have been generally questioned, such as mechanization of the "care society", the treatment of patients not as whole persons but as cases, have also led to a debate of the physician's role and training as well. This debate has coincided with the general pedagogical attitudes that have been presented by authors such as Illich, Freire, and Postman-Weingartner.

It seems to us that there is a correlation between the debate of the physician's role and the pedagogical philosophy behind the SA course. The attempt to see the students not as passive recipients but as active participants, each with his or her own potential and needs, seems to us to be related to the opinion that medical training and medical care must be changed towards a more comprehensive view of man/environment/disease.

(5.2.3) Analysis categories for decisive factors

Gain/loss: Certain gain motivations may exist, e.g. prestige for the department chairman, gained by reporting good results and positive student reactions to the educational program committee.

A has worked hardest for the course. Aside from the personal satisfaction of seeing her own ideas practised, the course may have compensated her for a certain absence of potential status and prestige in research. A has no connection with departmental research and has had nothing to lose by devoting herself to instruction.

For other teachers within the department, there has been an obvious risk of loss, should they have devoted themselves to instructional methods that supposedly require a completely different contribution than the traditional ones. For a proponent of a traditional view of the subject of anatomy and the methods to teach it, the SA course is a threat of ideological and technological loss. If that is truly the case, why was there no organized, concrete resistance? As long as the instruction has been given only by a small group of teachers, the SA course has possibly meant no real threat against the time and energy that

the opponents wanted to devote to their own research, nor against the scientific and pedagogical paradigms of the subject as a whole.

Ownership: A is the most obvious owner of the SA course, but B's ownership is equally strong. He was the one who found A's idea worthy of being advanced at the teacher conference in the spring of 1974. On this occasion, there was very little discussion of the course structure. Except for the two persons mentioned, the department chairman may possibly have felt a certain ownership, which in his case would be related to his linkage with experimental activities in general. From spring 1975, opponents and neutral persons were engaged in the course. In those cases where the opposition was not clearly defined from the outset, this seems to have been a successful strategy. In the interviews, the current program leader expressed an obvious participation and ownership in the pedagogical ideas. However, the attempt to engage one of the most ardent critics, D, did not succeed. On the contrary, D marked his non-ownership by not adhering to the structure of the course.

Leadership: The formal leader, C, has played an important role by supporting the innovation process, and he has consistently tried to avoid major conflicts. His linkage to the subcommittee on the first three years of medical training has been an important support for the innovation process.

A and director of studies B share the leadership of the innovating system. Due to his position, B has had the authority to make decisions and to influence undergraduate education. Without the combination of his system position and his active involvement in educational issues, the SA course would probably have had no chance to survive and retain its original structure.

The primary innovation leader is A. From the outset, she formulated the idea, was responsible for the course, planned the details, selected program leader and lecturers, and had a firm grasp of the course. However, without the support of the director of studies and the department chairman, A had minimal potential to exercise influence within the department. She is a "marginal man"[1] in the system, an assistant without her own research assignments.

Her marginal position is further emphasized by the fact that her office is not in the anatomy building but in the building where the student office is located and where most of the instruction takes place. Other teachers have their offices in the building of the anatomy department.

Power: No strong power was needed to reach a decision on the innovation. Rather, it was a question of gaining responsibility for the course. B had this power, and he utilized it to keep the SA course away from others. The lack of interest and consequently of opposition meant that no power manifestations were needed. However, as the opposition grew, the formal power of the chairman and director of studies was necessary.

Naturally, the chairman and director of studies have considerable power within a department; in this case they have also had the background support of the educational program committee which wields potential power.

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[1] The importance of "marginal men" for innovations is frequently emphasized.

VII. Instructional television at the School of Technology, Linköping (1963–1976)

(1) Introduction

In 1969, a new technological institution (faculty of engineering) was opened in Linköping according to the proposal by U-63 (the 1963 Commission on Higher Education). The Minister of Education had proposed and the Parliament had decided that internal television instruction was to be a major feature of the programs at the new institution. Television programs were produced by a special national organization, the Committee on Television and Radio in Education (hereafter referred to as TRU), which was founded in 1967. The TRU programs were used in Linköping from the fall semester, 1970, but met with increasing opposition from teachers, students, and administration. Already in early 1971, TRU stated that it was not realistic to force institutions to use TRU programs. However, not until 1973 did the Ministry of Education and Parliament decide that this obligation was to cease. After that time, internal TV has been used to a lesser extent and in a different manner (not as complete educational packages); some of the TV programs are produced within the institution, and TRU has been responsible only for part of the production, on assignment by the institution.

The case represents a major technological innovation, implemented according to a center-periphery model. In addition, it is characterized by the extensive involvement of an external organization—TRU.

The case illustrates the end of the post-war "golden years" of higher education, when enrollment and resources were in constant expansion. It also illustrates the breakdown of the over-confidence in technological aids in education which was prevalent in the 1960's.

(2) Base situation

During the 1950's and 60's, the enrollment at higher education institutions increased, as did the costs for higher education. In a large part of the system (not technological education), an unlimited number of students were admitted, and it was regarded as politically impossible to quantitatively limit access to the "free" faculties. For higher technological education, where access was limited, an increase of the capacity was regarded as necessary due to the needs of the labor market.

In the Ministry of Finance, irritation was growing over the mounting and partially uncontrollable costs. The Ministry of Education began searching

ways to save in two areas: through more efficient use of time and increased utilization of educational technology.

In the 1960's, there was a wave of educational technology with strong confidence in technical instructional aids. Television became more common, and in other countries, e.g. the United States and Japan, TV had been introduced for instructional purposes as well.

(3) Description of the innovation

The TRU-produced courses covered cohesive parts of the educational program in certain subjects. Courses produced up to and including the academic year 1972/73 (when a new situation occurred) included linear algebra, algebra, numerical methods and programming, drafting techniques, optimization, general economics, differential and integral calculus, physics I, mechanics, mathematical statistics, mechanics of materials, regulation techniques, mechanical technology, and applied electronics. The material for each course consisted of a number of TV programs supplemented by other components such as summaries, exercises, examples, etc.

Generally, the packages determined time use. TV presentations, independent studies, and exercises would follow each other in predetermined sequences. The possibilities were limited when it came to individual adjustment of study methods, pace, and advisor contributions.

(4) Description of the sequence of events

The Government appoints the U-63. Its assignment is to propose expansion of higher education with consideration of increasing enrollment and costs. The chairman of U-63 is A, at that time division head in the Ministry of Education. Shortly thereafter, A becomes cabinet secretary and in 1967 cabinet minister responsible for higher education. — 1963

B, a member of the U-63 and previously Rector of the Stockholm Technological Institute, travels to the United States in order to study the use of TV in education. — 1964

U-63 presents a proposal for expanding the higher education system. A new technological institute in Linköping is proposed. At this institution, a modified two-shift system with internal TV instruction is to be applied. Both measures are expected to mean savings, and TV education is also expected to improve the quality of education. The proposals are based on a special report by B on expansion of higher technological education. An appendix to this report describes the use of internal TV in higher education in the United States, specifically oriented towards ITV lectures. — 1965

In the remittance procedure on the proposal, there is no strong criticism of the TV component, even if some voices warn against over-confidence in the new medium.

The minister of education proposes a new technological institution with two-shift studies and TV instruction in Linköping. Parliament approves the proposal.

The Ministry of Education appoints an organizational committee for higher — 1966

education in Linköping. A special subcommittee for the new technological institution is appointed as well, with B as chairman of the subcommittee.

1967 The subcommittee presents its proposal for the new technological institution in Linköping. It is emphasized that all lectures to more than 270 students are to be given by means of TV, transmitted to groups of 30 students. This affects the planning of facilities. It is further specified what TV programs are to be produced: up to and including 1973/74 a total of 805 half-hour programs. TV instruction is expected to lead to a decrease of the number of teachers and other staff members required for the new institution.

In the remittance procedure no greater attention is given to the question of TV instruction.

In the proposal presented to Parliament it is emphasized that internal TV is to be used to a great extent for instructional purposes. Further, for those subjects where TV instruction will be applied, curriculum plans are to be formulated by the interim board of the institution in conjunction with TRU. The plans will then be submitted to the Chancellor's Office for approval.

TRU is appointed and charged with clarifying the issue of TV and radio in education, as well as with heading experimental activities in this area. A substantial part of the assignment is to produce pre-recorded TV lectures for the technological institution in Linköping. These lectures, it is said, are to be designed so that they can be used in other parts of the higher education system as well.

Production of TV programs starts, based on preliminary curriculum plans by expert groups of the interim board.

1968 The basis for TV production is deemed insufficient, and a closer cooperation between TRU and teachers/subject specialists appears necessary.The Government then recommends the Chancellor's Office to appoint groups of subject experts, who are to be charged with "assisting the Office in preparing material for TV programs or other pre-produced educational materials to be used foremost in instruction at the technological institution in Linköping." Each group consists of teachers at universities and professional schools (at that time, no teachers were yet appointed for the new institution in Linköping) and one student representative. The task of such expert groups is to define the goals for each course, and the goal description will, in turn, determine the production efforts by TRU. In addition, a representative for the group will monitor the production work.

The Chancellor's Office, TRU, and the interim board of the technological institution in Linköping work out a new plan for pre-produced TV courses. There is a change in comparision with the earlier plan insofar that instead of 30-minute lectures, the production will consist of comprehensive instructional packages with short and long TV components in conjunction with directed activities based on course literature. The new plan includes some 1,300 teaching hours up to and including the academic year 1973/74.

TRU forms project groups for the actual production work. These groups consist of one or more teachers as well as production staff from TRU. Since teachers for Linköping are not yet appointed, almost all group members are from other institutions. Basically, the production follows a set pattern: limited test production – expert evaluation – sequencing of the course contents – evaluation by expert group representative – manuscript for TV program and

text books formulated by the producer – comments by the expert group representative – changes – preparation for taping – taping – correction adaption of textbooks – experimental use at technological faculty – evaluation – possible changes. Generally, the products are tested by teachers who have cooperated in the production work. The evaluations mostly indicate positive results.

The technological institution in Linköping opens in temporary facilities. Instruction is given completely without TV. For evaluation purposes, isolated programs are shown outside of regular classes, and discussions among instructors and students are encouraged. 1969–70

(Two-shift instruction is offered only to a very limited extent and is successively eliminated.)

Program production and testing continues.

TV instruction on a large scale is introduced in the first year courses. Due to deficiencies in equipment and facilities, there are great difficulties. Dissatisfaction starts growing among the teachers. 1970–71

Cooperation between the institution, TRU, and the Chancellor's Office is not satisfactory, and the Office appoints a coordination group with representatives for the three interests. Opinions are divided within the Office regarding procedures for contacts with TRU and the use of TRU-produced instruction.

The study results of the fall semester are very bad. In the beginning of 1971, daily newspapers in reporting about this relate the unsatisfactory study results to the TV instruction.

Increaslingly, conflicts occur between TRU on one side and teachers and administration on the other side.

It is emphasized in a TRU opinion on future production resources for TV and radio in education (March, 1971) that the experimental activities in the technological/natural sciences sector has met with great problems, that it has been difficult to reach consensus among subject experts on the goal definitions, and that it has been difficult to utilize the potential rationalization gains. "In these cases, a number of factors that are built into the current higher education system, seem to strongly limit the possibilities to introduce such instructional systems on the department level. *Also, it does not currently seem realistic to attempt to introduce such a system if the departments would be forced by central regulations to use it. A budget system that gives each institution free choice of means seems to be one of the conditions for general use of instructional systems of this type* (the italics are ours)."

A good distribution facility for TV and better facilities for instruction are occupied. TV instruction continues to a great extent. Resistance to TV instruction increases from teachers, students, and administration. A press discussion establishes a correlation between bad study results and TV instruction. 1971–72

In a memo to the Office of the Chancellor (January, 1972) the educational program committee of the technological faculty at Linköping criticizes the application of TRU instruction. The committee points out that it cannot fulfill its legal responsibility for education since it has little possibility to influence contents and costs. The educational program committee requests the authority to change goal analyses and curriculum plans and also demands that the

bodies responsible for study results be given free use of pre-produced materials.

1972–73 During the academic year, the quantitative extent of TRU instruction decreases noticeably. A non-official agreement to this effect has been made between the institution, the Chancellor's Office, and TRU within the framework of the coordination group.

The coordinating group presents its report in November, 1972, and draws some major conclusions. The report from U-63 and the guidelines for TRU have been too optimistic in regard to the potential of TV instruction. One of the main reasons for the difficulties that have been encountered is that the teachers in Linköping could not participate in content analysis and project work from the beginning, since the positions at the institution were not yet filled at that time. Many of the existing goal analyses have been too comprehensive. It has not been possible to prove any major differences in results between the TRU courses and conventional instruction. Neither can one pinpoint evident short range gains from rationalization, as presupposed in the U-63 report and the TRU guidelines. TRU instruction had to be started under many adversary circumstances. However, valuable pedagogical experience has been gained. "Disregarding the role of a possible future production unit for instructional materials with electronic components, continued activity with development of instructional materials in Linköping and at other institutions must be based on voluntary agreements and take place in close contact with those teachers who have direct responsibility for instruction."

A position as audio-visual aids consultant, with orientation towards TV production, is created at Linköping in the fall of 1972. Initial resources for internal TV production are created.

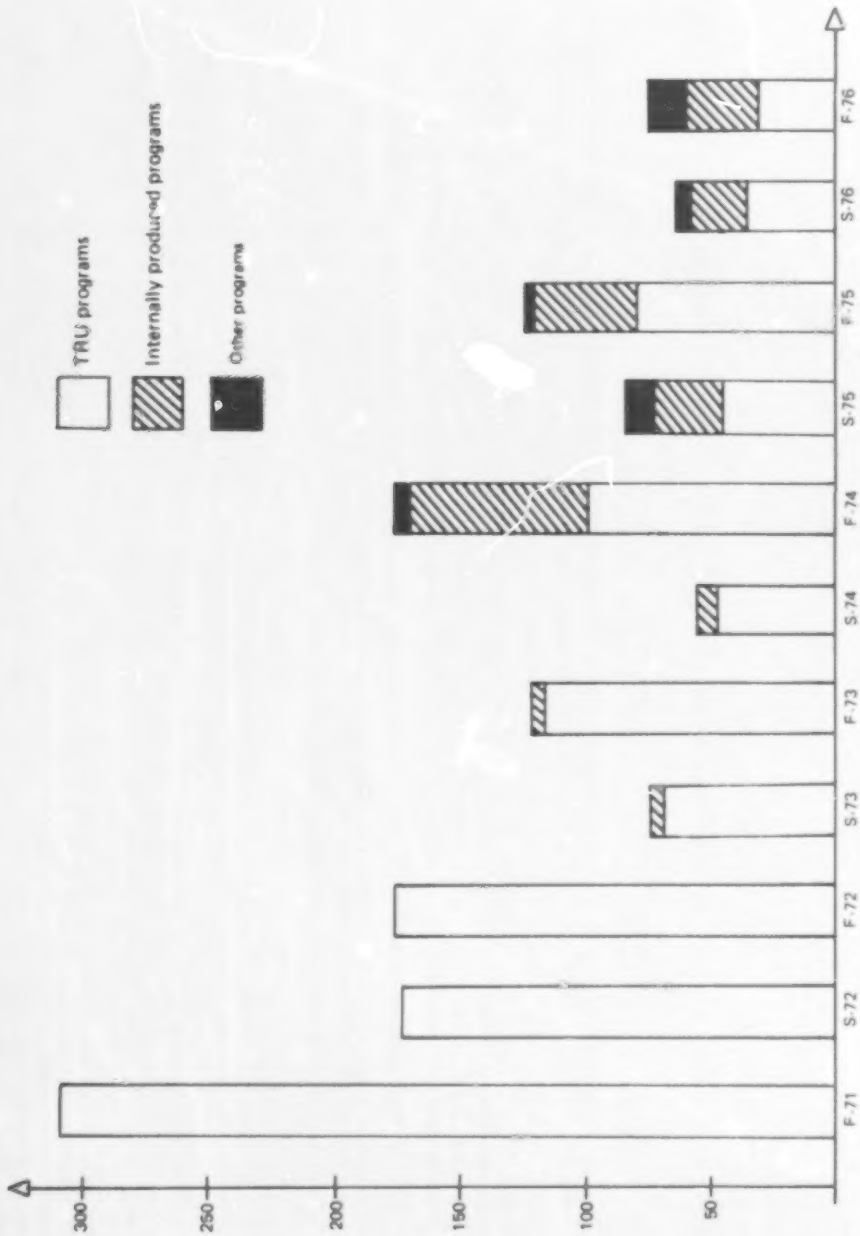
In a proposal on adult education programs (1973:54, March, 1973), cabinet minister A includes TRU instruction in Linköping. The old TRU committee has been replaced with a new one, which is basically oriented towards adult and pre-school education. In coordination with the Chancellor's Office, this committee has suggested that continued use of TRU materials and services is to be based on annual agreements between the institution and TRU. A comments: "Considering both results to date and the specific conditions for TV instruction in Linköping, I am of the opinion that TV should be a major component in the educational program of this institution. However, the institution itself should decide how TV is to be used for instructional purposes." Further, the institution should have access to TRU programs that have already been produced; it should be involved in "possible new production", and, in addition, it should have the capability to produce its own programs. SCr 600,000 are made available to the institution from special funds for radio and TV instruction (i.e. in addition to the general grants to the institution).

1973–74 and 1975–76 The use of TRU programs decreases, while the internally produced programs become very important from the fall semester of 1974. The extent of TV programs produced at different locations and during different semesters is shown in the diagram on a following page.[1] It should be noted that concurrent

[1] It should be noted that the figure shows the *distribution*, not the *production* of TV programs. Slightly more than half of the special funds (SCr 600,000) were used for TRU production. However, due to different accounting systems, the proportion of costs for TRU produced programs is higher than the proportion of actual TV hours produced by the TRU.

with the quantitative change, there is also a qualitative change, since TRU-produced materials can be used more selectively.

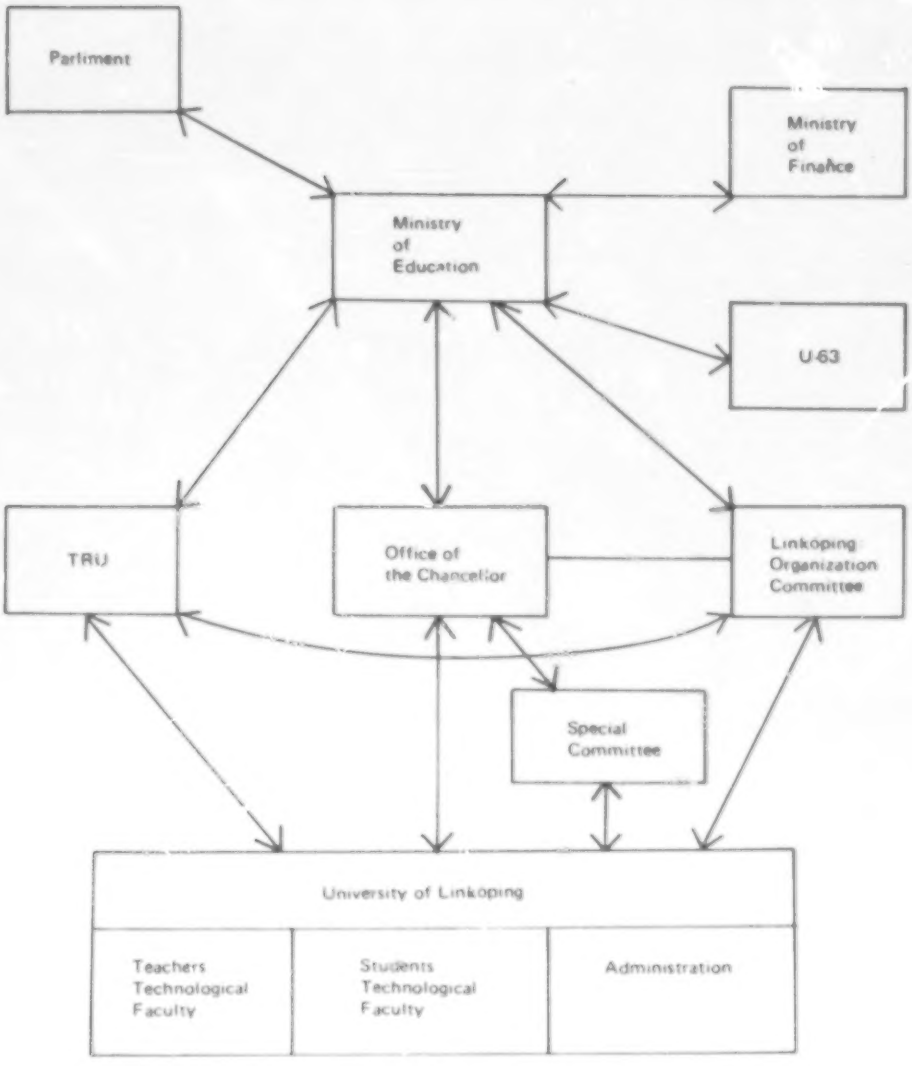
The use of TRU programs differs from subject to subject. In mathematics, which was one of the 'big' subjects for TRU programs, these have been completely discontinued, while their position has been best maintained in mechanics of materials.



(5) Analysis of the innovation process

(5.1) Interaction between systems

The interaction between systems is illustrated in the figure



Already the visual impression is obvious: something is happening above the head of the University of Linköping, with many and complicated interactions between superordinate and external organizations.

The Ministry of Education has a key role: that is where the various threads come together in this innovation. The Ministry of Education is under pressure from the Ministry of Finance to limit the cost increases for higher education,

and at the same time, it is under political pressure to expand the higher education system. An innovation such as TV instruction is expected to be a means to fulfill the two opposite goals. Even long after all others have realized that something went wrong and must be corrected, the Ministry of Education is holding its line. It seems that the turnabout of the Ministry in 1973 was based on fear that the issue, if discussed in Parliament, might possibly lead to a defeat of the government.

U-63 was the Ministry's tool to decide the balance between expansion needs and costs. The linkage was close, since the cabinet secretary in the Ministry of Education was also chairman of U-63. TV instruction was seen as one of the means to limit the cost increases, and TRU was to produce the televised materials. The position of TRU must have been difficult: it was a new organization outside the higher education system, and it was supposed to implement a new instructional method within local facilities that were, at first, only temporary. One cannot say but that TRU in cooperation with the Chancellor's Office went about the problem carefully: detail work in subject expert groups, goal definitions were formulated, production was constantly evaluated, and all courses were tested in experimental activities. It was hardly possible for an innovation to adhere more strictly to the so called "research and development model".

However, as early as in March, 1971, TRU already knows that it is not advisable to oblige Linköping to use the TRU material, and the committee expresses this opinion, albeit in generalized formulations.

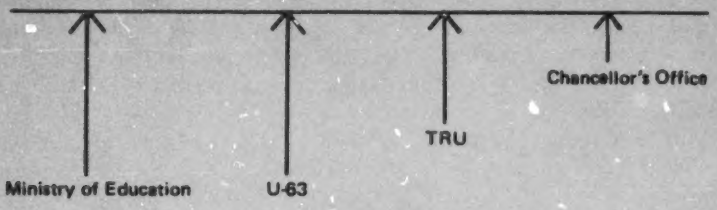
The position of the Chancellor's Office long remains unclear. The Office works loyally according to Parliament decision and the intentions of the Ministry of Education, but it is known that opinions were sharply divided within the Office, e.g. on how the coordination between TRU and the higher education system should be designed. The position of the Office is clarified in the report of the special committee in November, 1972: basic changes must be made in the use of TRU materials. However, it is surprising that this statement comes a year and a half after TRU itself has condemned the principle of obliging Linköping to use TRU materials.

With one exception, the teaching staff at Linköping could not participate in the planning of TV instruction, since staff had not yet been appointed. When TRU instruction was introduced in the fall semester of 1970, there was no advance opposition. Some teachers may have been critical of TV instruction from the outset, others may have been very positive, but the majority probably had no firm opinion but were willing to test the new medium. Resistance grew successively, e.g. because it was noticed that the TRU packages bound the instruction so tightly that the teacher's influence became minimal and his role changed radically.

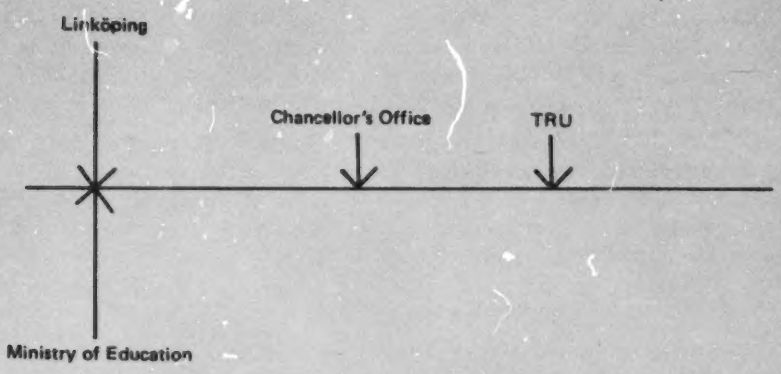
Student reaction seems to have been secondary in relation to that of the teaching staff. Resistance from the administration grew in conjunction with territorial conflicts with TRU.

Not until January, 1972, is there an official, written, and firm reaction from Linköping against TRU instruction, expressed in a memo from the educational program committee in Linköping to the Chancellor's Office. One may ask why it took so long. As in the case of the Office itself, the impression is one of typically Swedish loyalty to Government, a willingness to work according to given guidelines as long as possible, to play the game according to the rules.

To give a comprehensive image of the force field in this case is hardly meaningful, since there were so radical changes over time. However, before 1970, the basic image was



and the situation 1972–73 can be illustrated in the following manner



The development appears as a mirror image of the change strategy recommended by Lewin, i.e. to first of all weaken the opposing forces. At first, there are no opposing forces in this case. These emerge when teachers, students, and aministration in Linköping enter the system as new forces, and the resistance increases until a necessary dominance has been achieved.

(5.2) Characteristics of the innovation process

(5.2.1) Descriptive categories for internal and external relations

Level of conflict/consonance: During the entire preparatory phase, consonance seems to have been dominant. A conflict is not manifested until TRU instruction is implemented in the fall of 1970. After that, the level of conflict is heightened and reaches its peak in the spring semester of 1972. Even if the Ministry of Education does not change its position until spring, 1973, the level of conflict seems to have been lowered before that time. This is probably due to the un-official agreement with the special committee on deescalation of TRU instruction from the fall of 1972 and to the fact that Linköping felt its purpose to be achieved even though formal confirmation had not yet been received.

Personnel changes: The turning point in the innovation process is the major change that occurred when the Linköping institution was transformed from an organizational committee and an interim board to a full-fledged institution with teachers, students and administration.

The major innovator, B, participated in the process at first as a member of

U-63 and later as chairman of the subcommittee on organization of technological education in Linköping. When the institution starts its activity in 1969, he disappears from the picture. This might have been of some importance for the process, but it does not seem probable that the development would have been radically different if this had not occurred.[2]

When A became cabinet minister with responsibility for higher education, the change increased his potential to maintain the principle he had advanced as chairman of U-63.

Visibility: The innovation process had high visibility throughout. The visibility was increased and turned negative through the coupling of bad study results with TRU instruction and through the attention of the press. It still happens that anxious parents of hopeful Linköping technologists try to find out about TV instruction and its effects on study results.

Linkage: The innovation process is unusually closely linked to several external systems. U-63 and the Ministry of Education are highly instrumental in its emergence, as is TRU in the implementation. Actually, the entire innovation is based on external sources. It appears impossible that an institution by itself would shape a system for TV instruction in the manner it was actually done.

Correlations with external changes: The obvious correlations with external changes have already been mentioned: the wave of interest in educational technology, the growth of TV as an instructional medium, and the deteriorating economical climate for higher education.

(5.2.2) Analysis categories for decisive factors

Gain/loss: From the perspective of U-63 and the Ministry of Education, the potential gains are obvious: to increase the production of technologists at a lower cost and with improved quality. Towards the final phase of the process, the Ministry had to consider the risk of a political defeat in Parliament.

For TRU as well, the potential gain is obvious at first: it was one of the major assignments of the new organization, it gave employment and income. Eventually, a loss component enters the picture. Negative reactions from Linköping, especially in the coupling with bad study results, must have been an inconvenience for TRU.

The potential losses are predominant for participants in Linköping. The labor market for university teachers would be narrowed by TV instruction used as a 'teacher-saving' device, and this would be a professional disadvantage. However, in our opinion, this has hardly been of major importance. It has rather been a question of a non-material loss inherent in the fact that Linköping staff members had no possibility to influence the program production, while at the same time, they were responsible for the results of the studies. The innovation diverged from the general technology of the system.

From the point of view of the students, TV instruction must have appeared as a loss in study effectiveness. For the University of Linköping as an entity, the negative press has meant a loss in reputation for the institution.

Ownership: U-63 and the Ministry of Education—specifically A and B—are obvious owners of the innovation. Naturally, TRU shares this ownership.

When TRU started producing its educational packages, it was not possible

[2] B has refused to be interviewed by us. This is the only case when an interview has been refused.

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to engage current and future teachers from Linköping as members of expert groups, since the positions had not been filled. Only one future instructor at Linköping, C, was engaged in TRU work. In his specific subject, mechanics of materials, the TRU material has maintained its position much better than in other subjects.

The TRU courses were tested at another technological institution than Linköping, generally by the teacher who had participated in the production work. Generally, the test results were positive. Here, there was ownership by the teacher who used the course.

In interviews as well as in the report of the special committee, it has been said that the negative reactions in Linköping were due to the fact that the instructional packages were designed without participation by the local teaching staff. The packages were forced upon them from the outside, a clear case of non-ownership. The lack of ownership has several dimensions: one is that there is no feeling of participation in the innovation; another is the irritation over the pressure from above and from outside to utilize the innovation; and a third one is that the instructional package is not adjusted to the individual teacher—it does not coincide with his opinion on contents and operation of instruction.

Leadership: B is the major innovation leader, but when the institutionalizing is to begin at Linköping, he has disappeared from the process. It is difficult to define an individual leader for the innovating subsystem, since this system in itself is hard to define: so many different authorities are involved in the process. A is probably the person who is closest to the leadership position.

From 1969, C was the chairman of a macro-department; in 1973, he became dean of the technological faculty. He must be regarded as belonging to those who were more positive than others towards TV instruction, and in addition, he had participated in the design of the course in his own subject, mechanics of materials. The person who served as dean 1971—73 must also be regarded as positive to TV instruction. The chairman of the educational program committee was another person than the dean; he must be regarded as mainly neutral from the outset.

The Rector of the institution has not engaged himself very actively in the issue. Among the opposition leaders, the administrative director and the director of education spearheaded the resistance against TRU instruction in the form it was applied. Collective resistance occurred in the educational program committee.

Power: The case illustrates the potential power of an institution or parts of an institution, identified as teachers, students, and administration. This combination was the most important power factor for the elimination of the innovation, even if the positional changes of the Chancellor's Office and TRU were also influential. The Ministry of Education was the only power factor that remained on the opposite side in the final phase, before the innovation was abandoned. It seems as if the possibility of a political loss in Parliament has contributed to the change in the Ministry's position. This illustrates how "power" (here manifested by Parliament) can enter the process without being realized as a "force". The "force" of the Ministry of Education has been weakened by anticipation of a power show by Parliament.

(6) Summary

TRU instruction in Linköping illustrates three simultaneous change models: center-periphery, power-coercive, and research and development. The innova-

tion is initiated high up in the hierarchy, the Ministry of Education and its committee U-63. It is determined by Parliament which obliged the technological institution in Linköping to arrange instruction through an external organization, TRU; it is a question of coercion in the pure sense of the word. And the innovation was carefully designed, tested, and evaluated, before it was implemented in Linköping.

And still, the innovation was not successful.

Some may say that the innovation was bad and was abandoned for that reason. They may maintain that this was the wrong way to use TV for instructional purposes.

Others may maintain that the intentions were good but failed due to the conservatism of the teaching staff and the built-in resistance to change.

But the process can also be analyzed by means of the concept mechanism we have utilized. Then, it becomes obvious that there was no local potential for the survival of the innovation. Hope for gains, ownership, leadership, and a local power structure that was positive to the innovation—all of this was missing.

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4 Analysis of the innovation processes

4.1 Reliability of source material and description

Generally, the documentation has given us a good background for our description of the innovation processes, but the interviews have nevertheless been of great importance for forming a complete representation and have contributed to our understanding of the behavior and importance of various actors and subsystems. Naturally, the persons we have interviewed were influenced both by their position within the system and their personal opinions, when judging the development.

We have also noticed a tendency with the persons we have interviewed to reinterpret their own roles. Those who have opposed a successful innovation not seldom tend to play down their own opposition roles; some have even gone so far as to deny that there was any opposition at all. This tendency was easy to prove, since we could check such statements against our documentation as well as against statements by other persons.

Only very few of the persons we interviewed have commented on the drafts of our case studies. (There is, however, a great variation between the cases.) With few exceptions, the comments have not touched on the general outline of our descriptions but rather on details and nuances in the analysis. The comments have reinforced our opinion that the position within the system is essential for the perception of the innovation process. Insofar that we have found the comments relevant and justified we have taken them into consideration.

We believe that our chronological descriptions of the events are basically correct. The interpretation of the processes is by necessity based on our own evaluation which is, in turn, based on documentation and interviews. We do not believe that our evaluation and our conclusions would be changed by interviewing more participants or continuing the interviews we have conducted, nor by questionnaires.

4.2 Potential and limitations of methodology

In assessing the validity of our results it must be kept in mind that our studies have been limited to a certain type of innovations: they have all concerned contents or methods of instruction, and they have all deviated from the existing system. No direct conclusions can be drawn regarding other types of innovations, e.g. introduction of more modern textbooks, more modern equipment, national guidelines for admission, institutional organization, etc. Nor can direct conclusions be drawn regarding any other type of system of higher education than the one existing in Sweden at the time our study was conducted.

During our investigation, we have studied a number of processes involving a

variety of subsystems or milieus. However, we have not studied these milieus in their entirety; thus no conclusions can be drawn regarding their general tendencies to or capacity for innovations. Other investigations would be necessary in order to determine the innovativeness of organizations in relation to organizational characteristics.

Each innovation contains a unique composite of conditions, and no two innovation processes are identical. However, if common traits are clearly revealed in a comparison by means of a uniform and consistent analysis, certain general conclusions should be justified.

An investigation of innovation processes carried through with the method we have utilized may give valuable knowledge mainly about (1) the conditions within a certain supersystem (in our case the higher education system) for changes of the nature we have studied, and (2) conditions for and characteristics of the innovation process. This, in turn, can lead to conclusions regarding change strategies. Further, we believe that our studies can increase the knowledge of forces and structures within the system and maybe give ideas for other investigations.

4.3 System properties and system effects

4.3.1 Some characteristics of higher education as a system

Previously, we have said that a system may be described by means of its membership composition, its ideology, its technology, its organizational structure, and its relations with the environment. Limiting ourselves to the Swedish higher education system before the 1977 reform, we have found that in all these respects, the system is characterized by its basic structure of scientific disciplines (subjects) and by its task to produce creators of new knowledge, (graduate education), to produce new knowledge (research), and to impart knowledge (undergraduate education) within the framework of the disciplines. In our opinion, this structure of disciplines and the orientation towards production of knowledge are the strongest governing factors in the system.

The most important *membership group* consists of teachers and researchers. They are organized in subsystems according to disciplines (departments, etc.), and their main competency as well as their professional identity is chiefly connected with the discipline. The discipline also determines their national and international contacts outside of their own departments.

Within the departments, various subsystems of teachers/researchers and graduate students may be discerned. During the 60's and 70's, the tendency seems to have been towards the development of two types of subsystems: one is mainly concerned with research and graduate education (professors, research assistants, *et al.*), and one with undergraduate teaching (lecturers *et al.*).

The influence of administrators within the Rector's Office and the Chancellor's Office has increased. Since they are generally not oriented towards a specific discipline, they provide a certain balance against the dominance of the disciplines as a governing factor within the system. However, they still have to function within a structure that is determined by these disciplines.

Among the students, two main groups should be distinguished. One consists of graduate students, allied with a specific discipline. The other consists of undergraduate students. Though generally studying one subject (or discipline) at a time, they are nevertheless not bound to the ideology of a single discipline

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(but perhaps to that of a group of disciplines) since the time spent on each subject is limited. Although hardly manifested at all as formal organizations in our case studies (student unions, student councils, members of educational program committees, etc), the student groups appear in two other contexts. First, the opinions of a student collective (Eastern European studies, technological faculty in Linköping, etc.) may work for or against an innovation. Secondly, individuals or groups among the graduate students have almost always played an important part in the innovation process. This will be discussed later.

The specific *ideology* of higher education, i.e. goal perceptions and values, is also ultimately determined by the disciplines. The overall ideology of higher education may be regarded as a common denominator for the disciplines and is oriented towards the three main goals previously mentioned. The order in which these goals were identified was intentional: graduate education, research, and undergraduate education. In our opinion, this is the order of priority among the departmental goals.[1] However, these departmental priorities may be counteracted by other governing effects.

The goals of undergraduate education are complex and frequently contradictory. Further, it is difficult to measure the achievement of the goals. Thus it may be difficult to determine whether or not a change is desirable from the standpoint of goal achievement. On the other hand, these circumstances may also have a favorable effect on the innovativeness (cf section 5.3.4).

In regard to *technology*, higher education activities are generally conducted with high personnel intensity and low capital, and the orientation is towards production of knowledge and not of physical products. On these grounds, innovations in the higher education system are highly sensitive to personal behavior and social interaction. The problems of change are different from those encountered in capital or product innovations, which do not always affect human attitudes and relations to such an extent as do the system divergent innovations of educational contents and methods.

The funding system may be mentioned as another important trait in higher education technology.

The discipline orientation is clearly reflected in the *organizational structure*. Not only do the departments (or equivalent organizations) form the basis of the higher education system; they are also the most powerful organizational units thereof, and the curriculum is largely determined by discipline. The supersystem (sections, faculties, educational program committees, etc.) is not only composed of groups of disciplines; to a great extent it is also ruled by these disciplines through the "vendetta principle" and other mechanisms. (The first report of our function study revealed educational program committees as "paper tigers".)

However, in many cases there is a lack of consensus within and between various departments and disciplines. Differences in ideology and membership interests in particular may create controversies that are favorable for the emergence of innovations, but differences in membership interests may also be obstacles for innovation: there is a mutual suspicion and an eagerness to guard one's own relative position as concerns available resources.

Other structures than that of disciplines are also of importance for the functioning and adaptability of the organization. Generally, these structures are determined by an official system of national rules, e.g. regarding examinations, length of study programs, etc.

[1] See Martin Trow: *The American Academic Department as a Context for Learning*. In: Entwistle, pp 91–94.

In their *relations with the environment*, the higher education institutions have an important common denominator: they are not exposed to economic competition. They are not under pressure from market economy to innovate in order to survive. On the other hand, there is of course competition for available financial resources within the higher education system.

In other respects, the intensity and character of environmental relations show noticeable differences in the various parts of the higher education system.

Innovations in higher education and research can take place continuously and without major controversies within the existing disciplinary paradigms and other dominant structures. But innovations may also mean a deviation from or a challenge to the conventions of the system, and it is this latter type of innovations that has been of interest to us in this part of our investigation.

The system is mainly determined by the individual departments, and the interests of the departments and the system as a whole are to continue to exist, to protect the current position or to expand, to protect members, ideology, technology, organizational structure, and the way of communicating with the environment. There is a tendency to protect the system or parts thereof against innovations that deviate from the existing patterns.

4.3.2 Systemic preconditions for innovations

If it is true that the nature of the system is to resist deviating innovations, why do such innovation nevertheless occur? Why do the systems themselves change?

As we have previously pointed out, case studies of innovation processes are not suitable to answer such questions exhaustively. However, case studies may be useful in order to illuminate some of the possibilities for such changes to take place.

The environment may force a system to change. The Swedish higher education reform of 1977 is at least partly an example of such a situation. Here, the state forced changes in which the higher education institutions in many cases had no interest (to put it mildly). In certain cases, such a procedure may be successful; in other, it may lead to unforeseen reactions that diminish the effect of the change; in yet other cases, it is not possible to force a change. Though decisions by the state may force changes in the framework of content and methods of educational programs, it does not reach the internal, deeper dimensions of education. The reason is probably that education is a creative process based on interactions between teachers and students and consequently cannot be controlled by exterior forces.[2] The case of radio and TV instruction in Linköping illustrates how a central decision without local support leads to difficulties. Forced changes may also be considered undesirable for many other reasons.

It seems to us that an innovation can almost be traced to some kind of change in the environment. The innovation may be introduced from the environment, complete or almost complete. In other cases, ideas or trends may enter the system from the environment and stimulate the creation of an innovation within the system. But how can the system allow a change or innovation that deviates from its norms? Somehow, the obstacles must be weakened or

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[2] "In an authoritarian system anyone can be ordered to adopt something new, but no one can be ordered to create something new." Ivor Morrish: *Aspects of Educational Change*, London, 1976, p. 69.

[3] "Deviation is defined as departure from a social system norm. . . . Innovators. . . are necessarily deviant in their time of adoption." Everett M. Rogers: *Diffusion of Innovations*, New York, 1961, p. 206.

removed in order to implement the innovation. This is what Lewin calls "unfreezing", and it is the first stage of the innovation process. We will discuss this later.

The *innovators* are the ones who bring different, innovative ideas across the border lines of the system. They are frequently characterized as oppositional, atypical, different, marginal men.[3] They may belong to a subsystem which in its entirety is different from the supersystem or from other subsystems within the supersystem.

In order for the innovation to be institutionalized, the equilibrium must be in a state of continuous moving[4] (Lewin's second phase), until the institutionalization has been stabilized (Lewin's third phase, 're-freezing'). The change in the equilibrium may be achieved by weakening the restraining forces, strengthening the driving forces, or a combination of both.

A *weakening of the restraining forces* may occur either when these forces are diminished for other reasons or when the pro-innovation leaders consciously attempt to weaken them. The architecture program at Chalmers and the TRU project at Linköping exemplify the first situation. In the case of Chalmers, there were vacancies in some of the professorships where the incumbents would have been expected to emerge as opposition leaders due to their positions within the system. In Linköping, there were no restraining forces in the beginning since the decision to implement the innovation had been made before the system had been created in which it was to be implemented. A conscious action to diminish the restraining forces can be found in the cases of art studies at Lund, the Environmental Studies Programme at Lund, and the systematic anatomy course at the Caroline Institute in Stockholm. The method of decreasing opposition in these cases was basically to hide or to play down the system divergent characteristics of the innovation, i.e. by manipulating the visibility of the innovation.

In most cases, there is a *mobilization of driving forces*, which is remarkably obvious for the Eastern European studies program at Uppsala. In this case (and in other cases as well), the strategy is to convince leaders of subsystems or powerful groups within subsystems to release the force of the respective subsystem in favor of the innovation. In such cases, the level of conflict is usually high. The case of Civics is different in the respect that it illustrates a significant lack of such mobilization of driving forces. Since the resistance to this innovation seems to have been weak, only a minimum of driving force should have sufficed to implement the innovation.

The influence of driving forces on the state of equilibrium may be manifested in many different ways: formal decisions, work, influence on group attitudes, etc. The allotment of funds may frequently be of importance. Thus, the availability and amount of funding affected the innovation processes in Eastern European studies, the Environmental Studies Programme, and the TRU project. Conversely, lack of funding affected the case of Civics.

4.4 Characteristics of the innovation process

Our conceptual apparatus has emerged during the course of our investigation. This fact in itself indicates that we have found this apparatus to be relevant for describing and analyzing the innovation processes. In the following, we intend

[4] "... we view the innovation process as involving a continuing disequilibrium." R. Nelson and S. Winter: *In Search of a Useful Theory of Innovation*. In: *Research Policy*, January 1977. Amsterdam, 1977, p. 48.

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to summarize the applicability of our apparatus, basing our presentation on the cases we have previously discussed.

4.4.1 Descriptive categories for internal and external relations

The innovation processes that we have studied bear the characteristics of political processes. They have developed in situations of conflict within and between systems dominated by different interests and endeavours. The concept of *level of conflict* becomes important to catch this aspect of the process. Some processes of diverse character may serve to illustrate this statement. So, for instance, the level of conflict was continuously high in Eastern European studies while it was constantly low in the Art Studies. In the case of TRU instruction, the level was initially low but shows a rising curve, whereas the opposite is true for systematic anatomy.

Among other things, the level of conflict expresses the perceptions of threat within systems and parts of systems during various phases of an innovation process. Our cases coincide well with Lewin's theory that if a change of the state of equilibrium is caused mainly by increase of the driving forces, it leads to a high level of conflict, while a weakening of the restraining forces leads to a low level of conflict.

Visibility is closely related to the level of conflict. High visibility causes the opposition to notice system divergent or threatening characteristics of the innovation and, consequently, to mobilize restraining forces. Low visibility can make it easier to implement an innovation, but a certain amount of visibility is necessary in order to gain support for the innovation. Selective visibility may become a solution to this dilemma. That can mean that the innovation is being made visible in certain systems or components of systems, but not in others. Or, the innovation may be perceived differently from different vantage points, e.g. the system divergent components may be played down. Such selective visibility is apparent in the case of the Environmental Studies Programme. In the case of systematic anatomy, the system divergent characteristics were played down at the presentation within the department.

Innovations of the kind that we have studied bring about changes in the system. In any system, the most easily noticeable and definable element is its membership. Thus, it can be assumed that *personnel changes* should be noticeable during the innovation process. Such changes may mean that members enter or leave the system, or change their position within the system. In all of our seven cases, there have been obvious personnel changes that have influenced the innovation process.

Linkage illustrates the attempts by the primarily innovating system to mobilize other, surrounding systems in support of the innovation process. Linkage has been observed in all our cases, but the relative importance thereof shows strong variations from case to case.

We have already expressed our belief that an innovation is always related to *external change*, though these external changes may vary in nature. In several cases, we have observed the importance of an influx of new categories of students and a resulting change in the patterns of study. The change in the cultural climate for higher education that can be symbolized with the year 1968 is another factor that seems to have had a great importance in many of the cases. We will return to this later.

A few case studies of innovation processes can only indicate the importance of external relations and exemplify a few types of external changes that may be influential. It would be interesting to have another investigation attempting a

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more complete mapping of those external changes that contribute to changes in the higher education system.

4.4.2 Analysis categories for decisive factors

Gain/loss is the dynamic construct that best explains the reactions of subsystems and individuals to an innovation. This is a broad and multidimensional concept that covers a wide range of needs and interests.

Initially, we believed that security/stability would be the most obvious gain and insecurity/instability the most obvious loss. This is possibly true, if the concept is seen in its widest frame of reference. It then should include not only physical survival and security but also the security of status, of having one's position and one's recognized competency.

Another aspect of gain/loss has more weight than we had originally expected, an aspect that our case studies have made us recognize as the one way to explain the intensity of certain goal-oriented behaviors. It is a question of an ideological need, an ideological gain or loss. From the standpoint of the system, the ideology of the system must be maintained. From an individual standpoint, the gain is one of having created something that gives satisfaction. The best term may be self-realization, both systemically and individually.

It is impossible to weigh the needs of security and of self-realization against each other, but these two broad types of needs and the gains or losses related to them are what most noticeably places systems and individuals among driving or restraining forces.

Ownership has emerged as a forceful explanation of attitudes towards innovations. It is possible to make a distinction between direct and indirect ownership, and in the former category between total and partial ownership.[5] Total and direct ownership belongs to those who have created the innovation or introduced it in a complete or near-complete form into the system, in other words to those we call innovation leaders. Those who have created only a part of the innovation have partial and direct ownership—this is typical of secondary innovation leaders. Indirect ownership means that a person feels as a representative of a broad change tendency which can include the innovation in question. This type of ownership is common among the formal leaders of innovating systems.

When it comes to *leadership*, we have made a distinction between innovation leaders (primary leaders), secondary leaders, and formal leaders of innovative systems. The relations between leadership and ownership have been indicated above. Leadership and its relations to the situation within the system are factors of vital importance for the development of an innovation process.

The simple conceptual apparatus we have used to define leadership is an attempt to get away from the verbose and diffuse designations of individual roles that are common in innovation research. We cannot but find that our simple apparatus is sufficient and rewarding for those cases where the innovation process is of a political character. (For our purposes, designations according to diffusion and information models are meaningless—e.g. early adopters, late adopters, and similar expressions.) If it should be necessary to give a more precise definition of individual roles, a refinement of the leadership categories would probably serve the purpose.

[5] Jack Lindquist's definition of ownership: "The degree to which persons or groups whose support is necessary to implementation feel that planned changes are their solutions to their problems in pursuit of their goals." *A Comprehensive Approach to Institutional Development*. In: *New Directions for Higher Education*, No. 15, Autumn 1976. San Francisco, 1976.

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However strong the motivation of a person or a group in terms of hopes for gains or risk of loss, however obvious ownership or strong leadership, if there is no *power* that can be mobilized, there is no possibility to move the equilibrium of the force field so that an innovation may be realized. The activation of power as force determines the development. But non-activated power may influence the process as well. The mere knowledge that power does indeed exist in various parts of the system and may be activated in a certain direction under certain circumstances may by itself cause other components of the system to increase or reduce the force they exercise, or even to "change sides" in the force field.

In all our cases, the innovation process has the characteristics of power play. It is a political process.

4.4.3 Some specific factors

In addition to the theoretical framework of our system analysis and our conceptual apparatus, we have found some other typical traits in our cases, and we will touch briefly upon these.

Previously, we have indicated the importance of the trends that can be symbolized by *the year 1968*. Frequently, persons who were undergraduate students in 1968 have had an opportunity to later influence an innovation process through their positions as graduate students or teachers. Frequently, the orientation or ideological contents of the innovations also bear a certain correlation with trends manifested in the year 1968: the involvement of higher education in societal problems, international consciousness and solidarity, project oriented and inter-disciplinary education, etc.

With the exception of the TRU case, there is an ideological tie with 1968 in all our cases. Personal connections are particularly obvious in the cases of Art studies and the project oriented architectural program.

It would be worth while to make a special study of how the change in the cultural climate around 1968 has influenced changes in higher education.

In five of our cases (the exceptions are Civics and the TRU program), *graduate students and amanuenses/assistants* have exercised a noticeable influence on the innovation process, be it as innovators, as secondary leaders, or collectively as an informal subsystem. This indicates the potential of the graduate students to influence and change the higher education system, e.g. as a link between undergraduate education and research/research training. As far as we know, their importance in this respect has not been given much attention in the discussion in Sweden.

It is natural to question the role of *organized research and development activities* in the innovation processes (as central or local R and D units, and in regard to funding). These activities have been part of most processes but without major direct effects. Clearly, our case studies do not give sufficient basis for general conclusions on this point. The general change climate that is presumably promoted by research and development activities may be assumed to have influenced the cases we have studied, although this influence has not generally been directly demonstrable.

4.5 Stages in the innovation processes

Our project did not aim at analyzing the various stages of innovation processes; however, some observations from this point of view can be made.

Kurt Lewin has given a simple but poignant definition of three stages, name-

ly unfreezing, moving, and re-freezing. We have utilized the same terms.

"Unfreezing" is a prerequisite for "moving" to occur. A locked or balanced situation is opened for development. Schein defines this stage as "creating motivation to change."[6] However, it is more complicated than so. A locked situation must be opened and a possibility for change created over the entire field. One or a few factors may trigger the immediate event, but the unfreezing includes the entire situation.

Next, the "moving" phase begins. It may be short and reach a new equilibrium rapidly, or the process may last over several years. But in either case, the moving must continue until the new situation can "re-freeze"; otherwise, there is no institutionalization of the innovation. If the moving stops earlier, the original situation will remain (cf the Civics case). The TRU case exemplifies an unsuccessful re-freezing, where only fractions of the innovation remained.

There are other phase-designations for innovation processes than the three stages identified by Lewin. They relate to varying perceptions of the innovation process *per se*. Rogers identifies the following five stages: (1) development of consciousness of the innovation; (2) interest in the innovation; (3) prognostic evaluation; (4) experimental application of the innovation; and (5) decision to adapt or reject the innovation.[7] It is obvious that the innovation process is seen as an intellectually determined diffusion process among individuals.

In the second edition, Rogers and Shoemaker have changed the five-stage model to one of four phases: "The *knowledge function* occurs when the individual is exposed to the innovation's existence and gains some understanding of how it functions. The *persuasion function* occurs when the individual forms a favorable or unfavorable attitude toward the innovation. The *decision function* occurs when the individual engages in activities which lead to the choice to adopt or reject the innovation. The *confirmation function* occurs when the individual seeks reinforcement for the innovation-decision he has made, but he may reverse his previous decision if exposed to conflicting messages about the innovation."[8]

A time-based model for collective decision making is presented by Rogers and Shoemaker to complement this main model of an individual process.[9] Five stages are included: (1) stimulation of interest in the need for a new idea; (2) introduction of the new idea into the social system; (3) legitimization of the new idea; (4) decision on action; (5) implementation. This collective model can be quite well applied to our cases, but it emphasizes the formal characteristics of the decision making process, while the conflicts and the dynamics of the social force field are not apparent.

For hierarchically made innovation decisions in formal organizations, Rogers and Shoemaker utilize the same first three stages as in the individual decision making process, but exchanging the word "individual" for "decision making unit". The fourth stage is divided into two: communication of the decision, and implementation of the decision.[10]

Havelock has described three commonly cited models: the research and

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[6] In: Bennis, Benne, and Chin, p. 98.

[7] Rogers, p. 17.

[8] Everett M. Rogers with F. Floyd Shoemaker: *Communication of Innovations*. New York, 1971, p. 25.

[9] *Ibid.*, p. 275 ff.

[10] *Ibid.*, p. 305.

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development model, the social interaction model, and the problem solving model.[11] The stages in the first model are research, development, diffusion and adoption. The stages of the social interaction model correspond to those above by Rogers and Shoemaker for individual innovation decisions. The phases in the problem solving model are diagnosis of the problem, search for solution, definition of goals and priorities, selection of solution, plan for implementation, implementation, evaluation, revision, institutionalization, possible dissemination. It can be said of all these development models that they offer relevant aspects of the change process but that they have a taste of intellectual laboratory. Power and conflict have no room in them, or are pushed into the background.

On the basis of case studies of curriculum changes in schools, Mackenzie has presented seven development phases:[12] critique of the situation, suggestions for change, development and clarification of action alternatives, prognostic evaluation and revision of the suggestions, comparison among suggestions, decision, implementation. This may be said to represent a simplification of Havelock's problem solving model and its sometimes unrealistic rationale. If any one of "our" processes comes close to such a structure, it would be the case of Art studies.

This may suffice to illustrate the most frequently utilized types of stage designation. They do not correlate well with a view of change as a political process which is determined by the system and which is full of conflicts. However, focusing on resistance to change, Godwin Watson has sketched a stage designation that is more politically oriented.[13] The first stage is one of pioneering: resistance is massive and non-differentiated. The second stage is called the pro and con stage. Here, the forces can be identified as to their positions in the social system and their estimated power. Then comes the conflict stage. This is when opposition is mobilized in attempts to stop the innovation. The fourth stage is one of stabilization. The proponents of the innovation are in power, but the risk still exists that latent opposition may be mobilized and the pendulum may swing back (this is still the situation in several of our cases). Diplomatic skill is essential in this stage. The fifth phase, finally, represents status quo; the old innovators rally to the defense against new changes.

Watson's model fits remarkably well with most of our cases (even if most of them are still in the fourth stage), and it is also very useable from the point of view of innovation strategy.[14] Still, it has two draw-backs as a general model of stages. First, it neglects the important opening for development which is inherent in the unfreezing, the possibility for change to occur. Secondly, it is probably too specific to be applicable to all innovation processes, even if limited to the type we have selected (but it fits quite well with these, with the exception of the "unsuccessful" cases, i.e. Civics and TRU).

Perhaps the best general model for stages is the one outlined by Lewin: unfreezing, moving, and re-freezing. More detailed models may, however, illuminate the phases of the innovation process from different vantage points, for different types of innovations, and in different types of systems.

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[11] R.G. Havelock: *Planning for Innovation Through Dissemination and Utilization of Knowledge*. Ann Arbor, 1971.

[12] In: Miles, pp. 420–423.

[13] Bennis, Benne, and Chin, pp. 488–489.

[14] Watson, who fulfills a line from Lewin, may be the one innovation researcher whose approach is closest to ours. Only in the very last stages of our work did we gain a significant interest in his writings, and we will return to him in the following chapters.

5 Theory discussion

5.1 State of innovation research

The state of the art in innovation research seems confusing and unclear. Empirical material has been amassed from a variety of areas, and the publication of investigations accelerated in the 1960's, when more was published than the total for the three preceding decades.[1] More or less complete theoretical or strategical models were constructed on the basis of this empirical material. Innovation research was conducted in many disciplines, e.g. social antropology, psychology, education, social psychology, sociology, organizational theory, business administration, economics, political science, and human geography.

In the 1950's and 60's, there was an air of optimism and enthusiasm in innovation research. Various contributions were made—of empirical, theoretical, and strategical nature—and it was imagined that they were all part of the same entity that would eventually suffice to clarify the conditions of innovation diffusion and social change. Once that task was completed, there would exist an improved strategy for implementing the changes that would make humanity more efficient and, consequently, happier. The study of conditions for change built on the evolution optimism of the post-war era and on the belief in the blessings of economical and technological advancement.

Now, it seems as if the innovation researchers begin to feel disappointment, insecurity, and almost irritation with the research situation. Three quotations from 1976 and 1977 will serve to illustrate these feelings.

> "Innovation theory will strike the reader, as it strikes us, as crude and simplistic, notable for its reach rather than its grasp. This is not to denigrate the efforts of the theorists. They have made a start, and for that we should be thankful. They have thrown up a range of ideas, parameters and insights which we can use, as they do, in the attempt to comprehend an important part of our experience, of what we do and what is done to us. But, and that is a significant but, their maps are primitive. To read them is to appreciate how little distance we have travelled on the road to understanding and explanation: how far there is to go."[2]

> "Unfortunately, the theoretical value of the research that has been done is problematic. Perhaps the most alarming characteristic of the body of empirical study of innovation is the extreme variance among its findings, what we call instability. Factors found to be important for innovation in one study are found to be considerably less important, not important at all or even inversely important in another study. This phenomenon occurs with relentless regularity. One should certainly expect some variation of results in social science research, but the record in the field of in-

[1] Rogers and Shoemaker, p. xvii.

[2] Barry MacDonald and Rob Walker: *Changing the Curriculum*. London, 1976, p. 4.

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novation is beyond interpretation. In spite of the large amount of energy expended, the results have not been cumulative. This is not to say that the body of existing research is useless... This troubling instability results from a lack of clarity on several conceptual issues.... Perhaps the most straightforward way of accounting for this empirical instability and theoretical confusion is to reject the notion that a unitary theory of innovation exists and postulate the existence of distinct types of innovations whose adoption can best be explained by a number of correspondingly distinct theories."[3]

"The current dialogue regarding policy toward innovation rests on two premises. The first is that technological advance has been a powerful instrument of human progress in the past. The second is that we have the knowledge to guide that instrument toward high priority objectives in the future. The first premise is unquestionable; the latter may be presumptuous. While all the attention recently given by politicians to scholars is flattering, we believe that the scholarly community has much less to say about appropriate policy toward innovation than many scholars like to believe. Prevailing theory of innovation has neither the breadth nor the strength to provide much guidance regarding the variables that are plausible to change, or to predict with much confidence the effect of significant changes."[4]

But the complaints do not only refer to weaknesses in theory. In spite of all that has been done, there are "blank spots" in the empirical studies as well. When it comes to innovation diffusion among individuals, Rogers and Shoemaker base their writings on extensive material, but in regard to collective innovation decisions they write (albeit six years ago): "As yet, there has been almost no research explicitly addressed to exploring theoretical hypotheses about collective innovation-decisions."[5] And their opinion on hierarchically made decisions within formal organizations is that "Diffusion researchers have largely neglected the study of diffusion and adoption of innovations involving authority innovation-decision; we know very little about the process by which authority decisions are made and organizational changes implemented."[6]

In the current situation, it is quite natural that a need is now felt for an overview, analysis of concepts, and a more firm and secure theoretical structure. Today it is also possible to discern where the empirical material suffers from the most striking "blank spots". The difficulties one encounters are basically the same as in other areas of social sience research. They depend partly on the fragmentation of theories according to disciplines, which illuminate the social reality from the point of view of the discipline but without giving a total overview. The systems approach is one attempt to escape this limitation.

In addition, the current situation in innovation research is related to what we experience as a general methodological crisis in the social sciences. The belief in methods borrowed from the natural sciences as the one and only is no longer valid. It is questioned whether one can indeed find relevant explanations of the

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[3] George W. Downs, Jr. and Lawrence B. Mohr: *Conceptual Issues in the Study of Innovation*. In: *Administrative Science Quarterly*, December 1976, pp 700–701.

[4] Nelson and Winter (1977), p. 38.

[5] Rogers and Shoemaker, p. 295.

[6] *Ibid.*, p. 315.

social realities by defining isolated variables in social events and relate them to each other in pairs. Such questions are also raised in educational research (see Chapter 2). The kind of criticism that Kurt Lewin expressed more than 30 years ago is becoming increasingly common. In this respect as well, the systems approach offers an alternative line of development.

5.2 Some development trends

The classical tradition in innovation research is to regard the development of innovations as a diffusion process. According to this tradition, diffusion occurred between individuals, even though the innovation took place in a geographical and social field, the structure of which influenced the diffusion. Diffusion was dependent on geographical communications, on information through social contacts, and the individual acceptance occurred by means of imitation or intellectual considerations.

This type of innovation research is rooted in ethnological research on innovation diffusion in ancient times and within primitive cultures. It was transferred to research on diffusion of industrial products in modern societies.

The study by Torsten Hägerstrand on the distribution of automobiles and radios in Skåne (south Sweden)[7] is an important and advanced example of this classical approach. According to Hägerstrand's results, somebody, somewhere, starts using the innovation by chance, whereupon the diffusion mechanism begins to function through a network of social contacts and manifests a distribution (region). Hägerstrand identifies four stages in this diffusion process. In the primary stage, several centers are formed. In the following diffusion stage, several new centers develop, and a regional equalization starts. In the third stage, the density of innovation occurrences increases, and in the fourth stage, a saturation is approached, where no further increase is possible.

Following the diffusion model, modern innovation research has treated such topics as, for instance, the use of new seed types by farmers, and new medicines by physicians. Empirical studies of this nature form the basis for a great proportion of theoretical approaches and concepts that have been developed.

This school of thought, oriented toward diffusion, physical products, and individuals, is represented not only by Rogers (1961) but also by Rogers and Shoemaker (1971) who still present the best overall summary of the state of research in the field.

Although Rogers does work with the concept of social system, he sees this as determining the behavior of individuals by means of its norm system; the social systems *per se* do not participate in the process. Rogers' example of a social system is typical: "The social system under analysis in a diffusion study may consist of all farmers in one country, the physicians in a community, or the members of an aborigine tribe." Rogers distinguishes between *diffusion*, which consists mainly in "the human interaction in which one person communicates a new idea to another person", and *adoption*, which is "the mental

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[7] Torsten Hägerstrand: *The Propagation of Innovation Waves*. In: *Lund Studies in Geography*, Ser. B, No. 4, Lund, 1952. It may be of interest that a researcher on educational innovations, Ernest R. House (*The Politics of Educational Innovation*, Berkeley, 1974) has based theoretical approaches on Hägerstrand's research (especially in relation to Hägerstrand's *Innovation Diffusion as a Spatial Process*, Chicago, 1967).

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process through which an individual passes from the first hearing about an innovation to final adoption."[8]

However, there are some system oriented attempts included already in Rogers and more expressly in Rogers and Shoemaker. The latter work contains a chapter on collective innovation decisions and another on authoritarian innovation decisions and organizational changes. But these two chapters seem loosely attached. They represent only 50 pages out of a total of 345 (not counting the appendixes), and are characterized by an obvious insecurity.

Ronald G. Havelock is the most active model builder when it comes to innovations in education, and he adheres basically to the individual and diffusion school.[9] His own orientation is practical– advice to those who wanted to implement innovations—and his theoretical models are structured as abstractions of change strategies. He presented three models: the research and development model, the social interaction model, and the problem solving model. The character of these models can be seen in the preceding discussion of stages in the innovation process. None of his models can be specifically applied to our cases. The problem-solving model seems to come closest. Havelock's models taste of artificial laboratory situations; it is possible that they have contributed to many unsuccessful change attempts in educational systems.

In addition to the traditional orientation toward individuals and diffusion, there are other trends, more heterogeneous in nature. One might perhaps say that these are oriented toward changes not only *within* a system but also *of* a social system. There is more emphasis on behavior of groups and organizations and on interaction within and between groups. These trends tie in with the ideas of social antropology, with social psychology and sociology, and with the organization research that began to flourish around problems encountered by industrial enterprises.

Within this large group, Kurt Lewin is a prominent theorist. In one of the well-known collections of innovation research papers (The Planning of Change; Bennis, Benne, and Chin, editors. First edition, 1961; second, thoroughly revised edition, 1969), there are several articles that are explicitly or implicitly inspired by Lewin's thinking, by organizational research, and systems approaches. But somehow, it does not go further. The theory has not been significantly advanced, and the attempts at theory formulation are noticeably scattered and vague. It is impossible to maintain that the heterogeneous social school has made any inroads on the dominance on empirism, theory, or strategy of the school oriented toward individuals and diffusion.

One debate-provoking book seems to have been of considerable importance for the re-orientation of thoughts concerning change processes, namely Donald A. Schon's Beyond the Stable State (1971). Schon presents a comprehensive view of the need for change, the resistance to change, different ways of innovation diffusion, public reform strategy, and development of learning and self-renewing systems. It would be impossible to give even a rough summary of his thoughts, but the important factor in this context is his attack on the diffusion models for their neglect of the conflicts inherent in socially significant changes. "The process is more nearly a battle than a communication... Innovation in any aspect of the system threatens the system as a whole."[10] As

[8] Rogers, pp 13–17.

[9] Ronald G. Havelock: *A Guide to Innovation in Education*, Ann Arbor, 1970, and also Havelock, 1971.

[10] Schon, p. 95.

Schon sees it, those innovations that demand a radical re-structuring of the system are the most important ones: "In such a case, diffusion of an innovation looks less like the dissemination of information than like a sequence of related disruptions of complex systems, resulting in each case in a new configuration."[11]

In the preceding section, we included a brief sketch of the search for improved theory and conceptual framework that is currently common among innovation researchers. New orientations seem to be on the way in the field of educational innovations. A couple of examples: within the Nuffield Foundation, Tony Becher has headed a project that has achieved a broad empirical mapping of content and method oriented innovations in higher education as well as an analysis of the conditions for change related to system characteristics,[12] and Per Dalin and Milbrey McLaughlin have made significant contributions to the formulation of concepts within the field.[13]

It is also significant that there is now a clear tendency to distinguish between various types of innovations. We have previously cited the distinctions made by R. Danforth Ross between paradigmatic and extra-paradigmatic innovations in higher education. According to Ross, different processes are inherent in these two types of innovations, and the two types require different modes of explanation. Ross is of the opinion that an extra-paradigmatic process is "a much more political process". "In addition to resources, such innovation depends on presence of groups willing to apply pressure and on an authority structure that allows for administrative leadership while being decentralized enough in key areas to keep faculty from feeling threatened."[14]

5.3 Our attempt at theory formulation

For various reasons, it may seem presumptuous on our part to speak of theory formulation. Our defense is that even within the framework of modesty, one may dare present some opinions, because the theory formation at present appears so confused and insufficiently developed.

5.3.1 Method and theory

There is, naturally, a correlation between one's theoretical starting point, one's choice of method, and the nature of the questions one attempts to answer. Our attempt at a theory and our results are related to the fact that we have based our investigation on case studies of innovation processes. We cannot prove our conclusions by means of quantitative data: ". . . there are Gestalten qualities of living organizations that are unlikely to be revealed by the ordinary modes of scientific analysis."[15]

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[11] Ibid., p. 96.

[12] Several reports have been published. The main report is Tony Becher *et al.*: *The Drift of Change*, London, 1975.

[13] Entwistle, pp 133–156.

[14] Ross, p. 152.

[15] Emery, p. 8.

Our theoretical starting points would have been different, and we would have used other methods, had we decided instead to study the openness to innovations at various university departments, the attitudes of various individuals toward innovations, or the selection of new course literature.

We have previously maintained that each innovation occurs through a unique coincidence of several preconditions and that each innovation process is unique. However, there are some common characteristics, and in our opinion, these may be identified by means of an illuminative method and analyzed by means of a theory related to that of Lewin.

Comparative case studies have some definite advantages: "General statistical relations ... can testify to accomplished changes, but not to the process of change, not to the laws of action, not even to the general direction of the evolution... The clinical approach will, above all, enable us to advance from a static image to an integrated image of the model, all of whose elements are interdependent." And case studies can—even if they are nothing but examples—"teach us even vaster systems than laws which a premature rigor has kept from being adequately comprehended."[16]

In order to present other aspects of the problems of change, it will be necessary to use other investigative methods than ours. One may, for instance, envision perspectives such as history of ideas or sociology of knowledge. Further, it would be possible to study the correlation between societal and educational changes, or the openness to or obstacles for innovations from a standpoint of individual psychology. All of these topics can impossibly be included in one single investigation. We believe that the approach we have used, i.e. a combination of social psychology and systems theory, is of specific significance for educational planning which is our starting-point. Theoretically, this is one of many perspectives that, in combination, would form a more complete image.

5.3.2 Lewin's field theory—our starting point

Part of Lewin's field theory is not clear. He applies this theory to individuals as well as to social systems, but its meaning differs according to which application is intended. Another difficulty is caused by his constant development—thus the meaning of his concepts and his model may vary within his own works.

Still, it is our opinion that Lewin offers an unusually rewarding basis for description, explanation, and prediction of the relations between various causes of change in social systems. In section 1.2.1 we have identified what we consider to have been of significant importance for us in his works, but we will also summarize the main points in this context.

A. *The systems approach.* Events and behaviors are explained by means of structures and forces across the social field as a whole. The systems possess their own characteristics and may be regarded as participants in processes. The importance of various parts of a system does not follow from their immi-

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[16] Michael Crozier: *The Bureaucratic Phenomenon*, Chicago, 1964. Regarding case studies and generalizations, see Bennis, Benne, and Chin, pp 117–118.

nent characteristics but from their positions within the system.[17] To a great extent, the behavior of an individual is determined by the system.

B. The *explanation of changes as disturbances of the equilibrium* in the force field; these disturbances being caused by driving forces gaining dominance over opposing forces.

C. The *view of the innovation process* as an *unfreezing* of the force field surrounding the equilibrium, a *moving* of the equilibrium which means a continuous change in balance over time, and *re-freezing* of the new quasi-stationary equilibrium.

D. The method of analyzing changes and causes of change by first reviewing *the system situation as a whole.*

E. The method of building up a conceptual apparatus of *dynamic constructs*, indicating interactions and interrelations, and using these constructs to analyze the causes of change.

These are the key thoughts that we have adopted from Lewin, who has inspired us in other respects as well.

5.3.3 Types of innovations and processes

The nature of innovations determines the character of the processes. This fact has been strangely obfuscated in innovation research.

A finished physical product—a stone axe, seed, medicine, a radio—can be distributed as a complete innovation. It has been manufactured somewhere, and it can either be distributed among new individuals and systems as a complete product, or, the idea thereof and the technology associated with the idea may be disseminated, whereupon manufacturing takes place in another system as imitation. No power struggle is inherent in such a diffusion of physical products; it is not a political process.

However, changes in physical products may have social consequences leading to political processes. A classical example: technological changes in

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[17] Already in 1941, Angyal gave an excellent description of the main points in this kind of systems approach (Emery, pp 18–26):

"A relation requires two and only two members (relata) between which the relation is established. A complex relation can always be analyzed into pairs of relata, while the system cannot be thus analysed. - - -

Most relationships are based upon 'identity', diversity, or similarity (partial identity with partial diversity) of the object, that is, on immanent attributes. The members of a system, on the contrary, do not become constituents of the system by means of their distribution or arrangement within the system. The object does not participate in the system by an inherent quality but by *its positional value in the system.* - - -

The dimensional domain is more intimately involved in the formation of systems. Here the dimensional domain not only separates the parts, but it participates in the formation of the system. The system is dimensional. A system is a distribution of the members in a dimensional domain. - - -

In a system the members are, from the holistic viewpoint, not significantly connected with each other except with reference to the whole. - - -

In system thinking the task is not to find direct relations between members but to find the superordinate system in which they are connected or to define the positional value of members relative to the superordinate system. - - -

In aggregates it is significant that the parts are added; in a system it is significant that the parts are arranged."

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the armament of US Navy ships threatened existing social systems and led to an intensive power struggle.[18] What really counts is if and how the innovation affects the main properties of a social system.

The characteristics of the process are also influenced by the relations between the level where it occurs and the position levels of those persons who will be involved in the implementation. In certain cases, an innovation process of political nature may have been initiated on a level (within a supersystem) which does not include the implementors, i.e. those who will use the innovation. This holds true for many of the changes inherent in the 1977 reform of the higher education system in Sweden: organizational changes, changes in admission policies, etc.[19] Even if such innovations are not physical products, they are nevertheless diffused from a center to a periphery, in these cases by means of a decision from above. It is possible to give orders regarding a new organization or new admission policies, and to expect compliance; usually, this does not cause any political processes in the true sense of the word among the implementors. Mostly, but not always, this is the case when the changes concern organizational or technical framefactors for educational content and method (e.g. central curriculum plans, etc.).

However, the situation seems to be a totally different one when the changes of content and method do not concern the frameworks only—and it is these other changes that have been the focus of our interest. It seems to us that these changes must be "re-created" by those who are to "use" them. It is not a question of adopting a finished innovation, nor of manufacturing an innovation as imitation according to detailed instructions. Instead, it is a question of impulses for an innovation, which must be created afresh within each system. The impulses are mere guidelines for this creative process. If the innovation deviates from the system, its creation (as far as it is visible) will start conflicts, power struggle; in short, it is a political process. Impulses may be freely diffused between systems and components of systems, but the creation and realization of the innovation takes place in a political conflict situation.

Due to such differences, it is impossible to explain the kind of innovation processes we have studied by using a theory and a conceptual apparatus that has been structured in accordance with innovation processes for diffusion of physical products (which do not change a social system), ideas for manufacturing such products, or authoritarian decisions that cannot be influenced by the implementors. In the type of processes we have studied, such diffusion related concepts as "change agent" or "gate keeper" become irrelevant. Instead, political concepts such as various (political) leadership roles may be useful in order to understand the conditions of change. This difference in the character of conceptual systems also indicates the difference in explanatory categories between conventional innovation theory and our attempt at theory formulation.

In addition to the nature of the innovations themselves, the nature of the systems is also important for understanding the processes.

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[18] Schon, pp 31–32.

[19] One should not be deceived by the fact that the implementors—teachers and students—have participated vigorously in this debate. This does not mean that they have had a significant position in the force field. Verbal manifestations do not constitute power. For a journalistic illumination of the situation, see Jan Mårtensson: *Lönar det sig att slåss?* (Does it pay to fight? A commentary on three major student issues and more than ten years of struggle. . .). In: *Lundagård*, No. 3, 1977.

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5.3.4 System characteristics as determinants for social change

A social system, S, is a grouping of individuals interacting for certain purposes. The same individuals belong to several subsystems at the same time. They may belong to subsystems that are totally included in the system S, that partially extend across the system borderlines into the environment, or that are located outside system S. System S is part of a super-system. Systems may exist as formal organizations or informal groups. According to our theory, those system characteristics that are particularly significant for explaining change processes are membership composition, ideology, technology, organizational structure, and relations with the environment. In addition to this there are secondary characteristics that are dependent on these main characteristics.

It is necessary to distinguish between system characteristics in general (and reactions to these characteristics) and the specific properties of the system to be studied.

G. Watson has attempted to identify the nature of various forces opposing change.[20] He lists adherence to norm systems, systemic and cultural connections, threats to interests, perceptions of what is sacred, protection against environmental threats. All these restraining forces seem to fall within our classification of relevant system characteristics, and could constitute innovation obstacles that would be applicable to systems in general.

There are other ways of describing organizational characteristics that are regarded as obstacles for innovations. Thus, for instance, Burns and Stalker distinguish between a mechanistic administrative structure, suitable for stable conditions, and an organic structure that facilitates change.[21] Frequently, a bureaucratic or centralized organization is regarded as a hindrance for innovations. This is not necessarily so; under certain circumstances, such an organization may be very efficient in implementing certain types of changes. Strong and open relations with the environment are regarded as favorable for change, but it may also be the other way around. For instance, it is easy to imagine that an educational institution with strong relations to the labor market and to professional life could become increasingly static by adjusting to existing patterns on the labor market and among the professionals.

These examples may suffice to illustrate what we believe to be the weakness of existing innovation theories, namely that they are too specific to be generally valid. It is too easy to disregard side effects and counter reactions; i.e. not to follow Lewin's advice above all to survey the field as a whole.

Concerning general organization characteristics, it is possible to state that systems do have a tendency to protect themselves, i.e. the interests of their members, their ideology, their technology, their organizational structure, and the nature of their relations with the environment.

Various system components—subsystems or individuals—are not completely uniform in regard to the basic characteristics. There may be difference in, for instance, membership interests or ideology. *This lack of conformity is the cause of "cracks" or conflicts in the system, and these, in turn, are the preconditions for innovations.* Using Lewin's terminology, one could call them overlapping force fields that cause tension.

Change also presupposes that the system is open, i.e. that it has contacts with its environment. One way of describing it would be that *impulses from the environment flow into the "cracks" in the system and "break" the system by*

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[20] Bennis, Benne, and Chin, pp 488–497.

[21] Tom Burns and G.M. Stalker: *The Management of Innovation*, London, 1961.

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creating a potential for movement. These environmental impulses and their "demolition effect" in the "cracks" are the central causes of unfreezing, and thus preconditions for innovations. But sometimes the organizational structure of formal organizations may be so firmly locked that, in addition, other changes in the organizational structure are required for unfreezing to take place. (This is applicable to several of our cases.) A primary unfreezing may cause secondary unfreezing effects.

Attempts have been made to identify specific circumstances within educational systems that would facilitate or hinder innovations.[22] Sometimes, these give the impression of being laundry lists of isolated factors; they are scattered observations rather than a coherent whole and do not fulfill the requirements of a theory, even if they contain certain truths (e.g. that educational innovations are not sufficiently rewarded or that the goals of education are complex, contradictory, emotionally charged, and difficult to measure).[23] They may also be too closely related to one specific system or situation to have a general explanatory or prognostic value even for educational systems.

We are also of the opinion that the system of education is much too heterogeneous to be regarded as one specific system in the sense that specific system properties could explain innovation processes all over the system. During an earlier period, it might have been possible to speak of higher education as a specific system in this sense, and internationally, similarities have previously been so significant that it might have been possible to formulate an internationally valid theory of higher education innovations. However, in most countries there has been a widening and differentiation of the higher education systems, and the effect of these changes would have limited the validity of such a specific theory.

In order to offer explanations and prognoses of innovation processes it is thus necessary to illustrate the composite of basic characteristics within the one specific system under investigation. In Chapter 4, we have pointed to some major elements of the decisive characteristics of higher education. In regard to membership composition, we have indicated various subsystems such as teachers/researchers (organized in additional subsystems according to disciplines), administrators, and students. We have also mentioned subsystems oriented toward reasearch/graduate education and undergraduate education, respectively. Concerning ideology, we have emphasized that it is determined by discipline and hierarchic in the order of production of knowledge producers (graduate education), production of knowledge (research), and transmittal of knowledge (undergraduate education). We have underlined that the goals are frequently complex and contradictory. Regarding technology, we have stressed that the activities are relatively personnel intensive and low in capital, and that there is generally a lack of innovation diffusion through promotion and sales. Traits determined by disciplines are noticeable in the technology. This also holds true for the organizational structure. The relations with the environment are influenced by the fact that higher education does not exist in a situation of market competition.

The above is to be regarded merely as an outline. As we have mentioned previously, our case studies do not suffice for a detailed description of the decisive characteristics of the system we have studied.

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[22] See, for instance, Miles, Morrish, or A.M. Huberman: *Understanding Change in Education*, Genève, 1973.

[23] "By a theory we mean a reasonably coherent intellectual framework which integrates existing knowledge, and enables predictions to go beyond the particulars of what has actually been observed." Nelson and Winter, p. 37.

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5.3.5 The conceptual apparatus

The concepts ("dynamic constructs") used by us partly to describe, partly to analyze the innovation processes, do not describe the field as a whole. However, they do present aspects that are essential for understanding the conditions for change. In this respect, our conceptual apparatus reminds of what Lewin calls "phase space".[24]

While we are convinced that the four concepts we are utilizing to explain the innovation processes—gain/loss, ownership, leadership, and power—are instruments that serve their purpose well, we must also admit doubts that the descriptive concepts—level of conflict, visibility, personnel changes, and correlations with external changes—are appropriate as building stones for a theory. Or, to phrase it more correctly: we are convinced that much better descriptive categories could be found, but in this study, we have not been able to do this.

We regard the innovation process as a political process characterized by conflict. The concept of *conflict level* catches a quantitative aspect of the conflicts. It is, however, possible that a qualitative definition of the conflict characteristics would be more rewarding in describing the process.

Visibility is a good concept for understanding certain aspects of the process; especially when it is a question of low visibility aimed at avoiding the mobilization of opposition and/or of high visibility aimed at triggering driving forces. The concept of visibility also illustrates the innovation process characteristic of being a political as opposed to a diffusion process.

Personnel changes refer to the main characteristic of membership composition, while *linkage* and *correlations with external changes* refer to the relations between the system and its environment.

It might be possible to develop descriptive categories for the process in a more systematic manner, using the major characteristics as starting points.

While we regard our concepts for description of innovation processes with a certain scepticism, we believe, that the concepts we use to analyze and explain the processes do form a valid element of theory, let it be that the contents of the various concepts need to be refined.

As we have mentioned, *gain/loss* is a multi-dimensional concept. The two dimensions that we regard as most important for release of driving forces are security and self-realization. In a similar way, opposing forces are released by risks of insecurity and submission. Obviously, many other types of needs and interests are to be considered as well, systemically as well as individually.

We have already elaborated on the importance and meaning of *ownership*. We distinguish between direct and indirect ownership, and within the former group also between total and partial ownership. It is not possible for us to discuss the psychological mechanisms behind the ownership concept, but it seems as if there could be a correlation with security and self-realization as well as with the creative element in an educational situation. Empirically, the importance of ownership has been proven in various contexts, both for collective and for individual ownership.[25]

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[24] "The phase space is a system of coordinates, each corresponding to different amounts of intensities of one 'property'." Lewin, 1951, p. 201.

[25] "The morale of a group of any size seems to be stronger if its action is based on its own decision and on "accepting" its own situation. For instance, the ability of an individual to "take it" in a shock situation is much greater in persons who create this situation themselves than in persons who are pushed into the situation from without. A comparison of a lecture method with a method of group decisions for changes of food habits in housewives shows that the method of group decision is much more effective." Lewin, 1951, p. 164.

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In our discussion of *leadership*, we distinguish between innovation leaders, secondary leaders, and formal leaders of the innovating systems. In some fundamental respects, the innovation leaders differ from the main properties of the system or neighboring subsystems. This deviation is what causes the "crack" that is the precondition for the innovation. The deviation is also what makes it possible for innovation leaders to catch impulses from the environment and introduce them into the system. The secondary leaders support the innovation in various ways; they may be found within the system as well as in external systems. The importance of the formal leader of the innovating system lies in his power position; his power may be exercised in different ways, but most important is that the formal leader "legitimizes" the innovation within the system.[26] The opposition leaders, finally, defend the existing characteristics of the system, totally or partially.

The concept of leadership and its subcategories serve to replace the type of individual role designations that is common elsewhere. This is a consequence of our systems approach and our view of the innovation process as a political process.

In our terminology, *power* has the same meaning as given by Lewin, namely potential force. Our ambitions have not included descriptions of various types of power positions and ways of exercising force.

5.3.6 Summary

The following are the main points in our attempt at theory formulation.

1. An innovation theory is valid for a certain type of innovations in a certain type of system. Certain elements of a theory may be more generally valid, i.e. various innovation theories may overlap. We do not maintain that our own attempted theory is valid for any other system than the higher education system, and we regard it as valid only for innovations that are system-divergent and affect contents and methods of education. Still, it may be possible that points 2–8 below are generally valid for system-divergent innovations in other complex formal systems as well.
2. The conditions for change are determined mainly by system characteristics.
3. The major characteristics of a system are membership composition, ideology, technology, organizational structure, and relations to the environment.
4. Systems tend to defend the interests of their members, their ideology, their technology, their organizational structure, and the nature of their relations with the environment.
5. The innovation process is a political process that takes place in a field of mutually opposing forces around an equilibrium. The development is; in accordance with Lewin's theory, explained by the state in the field as a whole.
6. The main phases of the innovation process are unfreezing, moving, and refreezing (Lewin). Unfreezing means that the possibility for change is created. Moving means a continuous disequilibrium, caused by the dominance of the driving forces over the restraining forces. Re-freezing means that balance is created around a new equilibrium.

[26] *Cf* Rogers and Shoemaker, pp 280–282.

7. Innovations that deviate from the system can occur only under the following conditions:

   a) There must be a "crack" in the system. The "crack" is created when components of the system (subsystems or individuals) deviate from the main characteristics of the system.

   b) There must be a connection between the "crack" and the environment.

   c) Impulses from the environment flow into the "crack".

8. In a specific system, the conditions for change are determined by the detailed contents of the main system characteristics. Thus, each system type must be analyzed separately with regard to its system characteristics.

9. The total field situation can be defined by analysis according to points 2–8 above; the field as a whole explains the general conditions for change or non-change. In order to refine the definition of change in a specific case, it is necessary to utilize a conceptual apparatus that explains relevant interactions and interrelations in the field.

10. A highly provisional mechanism for description of certain aspects of the innovation process would consist of the concepts of level of conflict, visibility, personnel changes, linkage, correlations with external changes.

11. The innovation process can be explained by means of the four concepts of gain/loss (needs, interests), ownership, leadership, and power.

In order to test and develop this attempt at theory formulation, it would be necessary to develop the type of systems approach that we have utilized, to expand the studies of innovation cases (e.g. to include other types of innovations and other methods) on the basis of the questionnaire included in Part II, and also to conduct an intensive study of a number of environments within the higher education system. We hope that we will have an opportunity to do this.

6 Some viewpoints on change strategies

6.1 Examples of change strategies

The literature in the field features several types of strategies to facilitate innovations. They are more or less clearly related to various theories on the nature of innovation processes. Naturally, most change strategies are influenced by the dominance of diffusion theories.

In their concrete application, Havelock's three models—the research and development model, the social interaction model, and the problem solving model—correspond to three different change strategies. Since we have mentioned these models previously, and since they are frequently mentioned in the literature concerning educational innovations, there is no need to treat them extensively here.

Among the change strategies for social systems, the three best known ones originate with Chin and Benne,[1] namely the empirical-rational strategy, the normative-reeducative strategy, and the power-coercive strategy. Various specialized strategies are described within each one of these major types. The empirical-rational strategy maintains that research will produce rational change that will be accepted because it is rational; there are several methods of diffusing such rational change. The normative-reeducative strategy aims at changing attitudes and values according to two major purposes: to increase the ability to solve problems and to develop self-knowledge and willingness to development. Education may be directed not only toward individuals but also toward systems. Impulses from Lewin can be found, pointing to group dynamics, organizational development, and action research. The power-coercive strategy means that power-based sanctions may be used in order to implement change.

G. Watson is close to Lewin's view of social change as well as to the conclusions drawn from our case studies. He has formulated a number of statements on how to reduce resistance to change.[2]

> "*A. Who brings the change?*
>
> 1. Resistance will be less if administrators, teachers, Board members and community leaders feel that the project is their own—not one devised and operated by outsiders.
> 2. Resistance will be less if the project clearly has whole-hearted support from top officials of the system.

[1] Bennis, Benne, and Chin, pp 32–59.

[2] *Ibid.*, pp 496–497.

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B. What kind of change?

3. Resistance will be less if participants see the change as reducing rather than increasing their present burdens.
4. Resistance will be less if the project accords with values and ideals which have long been acknowledged by participants.
5. Resistance will be less if the program offers the kind of new experience which interests participants.
6. Resistance will be less if participants feel that their autonomy and their security is not threatened.

C. Procedures in instituting change

7. Resistance will be less if participants have joined in diagnostic efforts leading them to agree on what the basic problem is and to feel its importance.
8. Resistance will be less if the project is adopted by consensual group decision.
9. Resistance will be reduced if proponents are able to empathize with opponents; to recognize valid objections; and to take steps to relieve unnecessary fears.
10. Resistance will be reduced if it is recognized that innovations are likely to be misunderstood and misinterpreted, and if provision is made for feedback of perceptions of the project and for further clarification as needed.
11. Resistance will be reduced if participants experience acceptance, support, trust, and confidence in their relations with one another.
12. Resistance will be reduced if the project is kept open to revision and reconsideration, if experience indicates that changes would be desirable."

On the basis of Lewin's field theory, S.V. Martorana and Eileen Kuhns have formulated a change strategy which they call the "interactive forces theory".[3] Basically, this theory suggests a calculation of the expected placement of individuals and systems among driving or restraining forces for various phases in the innovation process as well as a value designation of their expected display of force. In order to increase the driving forces and decrease the restraining forces, an action plan is then designed on the basis of these calculations.

It may not be uncommon to make preliminary calculations of this kind, and it is certainly wise. However, we question the gain of using such a complicated model as the one advanced by Martorana and Kuhns.

Much has been published on what may be called practical change tactics. Walter W. Sikes, Lawrence E. Schlesinger, and Charles W. Seashore not only present arguments in favor of project groups (campus change teams) but they also relate their arguments to theory and strategy for change and to actual cases.[4]

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[3] *Managing Academic Change*, San Francisco, 1975.

[4] *Renewing Higher Education from Within*, San Francisco, 1974.

6.2 Some starting points for change strategies

Based on our case studies and the attempt at theory formulation that we have related to these cases, it would be possible to formulate rules of strategy aimed at creating "cracks" in the system, at the greatest possible influx of external impulses into these "cracks", and at supporting all change processes that would begin, e.g. with financial resources. But such a strategy would be foolish, since it would build on the unreasonable assumption that change for the sake of change would be desirable. The fact that a system defends itself against change is not *a priori* a negative one. On the contrary, this tendency is necessary, since a certain stability is needed. But it is equally necessary that there is a potential for change, even though a deviation from the system be inherent in the change.

The attitude toward change strategies is ultimately determined by value systems, including ethics. Adhering to our own values, we would like to state the following base points for formulating change strategies:

1. It must be possible to implement changes that have been decided through orderly political, democratic process, even though these changes cannot be supported by sanctions. (There will, naturally, be differences of opinion as to which political decisions should be supported or opposed.) There must also exist a possibility to achieve change by revoking disadvantageous political decisions.
2. The higher education system should have a high innovation potential in forms of possibilities to perceive, test, and adopt or reject changes.
3. The higher education system should have a high innovation potential also in the sense that it should provide pluralistic change possibilities.
4. There must be well founded opinions on how change processes may be advanced.

6.3 Some rules of thumb for change strategies

Since the readers will be able to draw their own conclusions from our report, we will limit ourselves to a few pointers. One condition for meaningful change is that all levels of the higher education system are given opportunity to critically evaluate all potential changes.

1. Most important of all is thorough knowledge of the system, its characteristics, and its reactions to innovations.[5]
2. It must be possible for innovators to reach positions where they can act in favor of change. The system must tolerate those who deviate from it and let them influence the development.

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[5] "The structure of the organism, of the group, of the setting, or whatever name the field might have in the given case, has to be represented and the forces in the various parts of the field have to be analyzed if the processes (which might be either constant 'habits' or changes) are to be understood scientifically. The process is but the epiphenomenon, the real object of study is the constellation of forces. . . .
Therefore, to predict which changes in conditions will have what results we have to conceive of the life of the group as the result of specific constellations of forces within a larger setting. In other words, scientific predictions or advice for methods of change should be based on an analysis of the 'field as a whole', including both its psychological and nonpsychological aspects." Lewin, 1951, pp 173–174.

3. The occurrence of change processes should be encouraged through staff training, organization development, action research, project groups, activity evaluation, staff mobility, and external contacts.

4. Support from superior levels (financial and otherwise) for innovations is often limited to the early stages of the innovation process. It is important that the support continues throughout the entire process. Frequently, the re-freezing phase is particularly critical.

5. It is more advantageous to attempt to decrease the restraining forces than to strive for an increase in the driving forces.

6. One should not believe that high visibility is always of advantage for the innovation.

7. It is important that personnel changes take place, but individual security should not be threatened by such changes. Mobility is needed within the system as well as between the system and its environment.

8. External systems should be allowed to influence the change processes.

9. For the implementors of the innovation, the risks of loss should be minimized and the potential of gains maximized. This means, for instance, that selective financial support should be available. Attention should also be given to the potential for security and self-realization.

10. In some way, the implementors of the innovation should have participated in its design, creation, or development, so that they experience ownership.

11. The importance of leadership must be more fully recognized in the higher education system. The positions of the formal organization leaders must be strong and the assignments attractive.

12. A calculation of the power situation (the potential force field) should be included in each evaluation of the possibilities to implement a change.

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PART II

Questionnaire regarding educational changes

1 Introduction

Within the framework of our function study, a questionnaire regarding educational changes was distributed in December 1975. The questionnaire form is included as *Appendix 1*.

The purpose of the questionnaire was to gain familiarity with trends and directions concerning internal changes in higher education. We wanted answers to the following questions: What kinds of particularly important changes have taken place during the past several years? How have the obstacles and the facilitating factors been interpreted? What changes are currently regarded as particularly desirable? What are the evaluations of possibilities and difficulties in implementing those desirable changes?

Further, we were interested in knowing who had taken the initiative for changes and whether special support of some kind had been received.

One of the main features of the 1977 reform is to create a common organization for all postsecondary education. Since we wanted an illumination of possible differences between various types of organizations in the above mentioned respects, we have included both schools that traditionally have belonged to the higher education system and such that have been outside.

A questionnaire of this kind is a blunt instrument and gives no exact information on details. In spite of this, we believe that it has a certain limited value as an indicator of general change orientation. A follow up and an intensive study of some responses would, however, be necessary, and we hope to be able to return to such a project in the future.

We would like to point out that each questionnaire has been completed by one person; thus, it reflects only an individual evaluation of accomplished and desired changes.

Appendix 2 is a typical example of an instruction letter that accompanied the questionnaire form.

1.1 Selection and method

The total population consisted of all educational areas within the domain of the former Office of the Chancellor of the Swedish Universities as well as a number of areas under external jurisdiction (teacher colleges, nursing schools, journalism schools, schools of social work). The selection includes 100 subjects. The selection was based on our desire to include representatives of all faculties and university locations. Among institutions outside the domain of the Chancellor's Office, we wanted to include both small and large organizations.

With these principles in mind, we applied a two-step, stratified selection, including one university faculty of each type and one or two from other types of educational institutions.

At the faculties of humanities, natural sciences, and social sciences, the questionnaire has been completed by the director of studies or the chairman of each department. The faculties of law and theology have been regarded as

departments, and the questionnaires have been completed by either the director of studies or the chairman of the educational program committee.

At the faculties of technology, medicine, and dentistry, the questionnaire has been completed by the educational secretaries of the various programs, or the chairman of the educational program committee, respectively; at a limited number of departments, the director of studies or the head of department has responded.

Finally, in educational programs outside the Office of the Chancellor domain, the questionnaire has been completed by the rector or somebody in a comparable situation at institutions offering only one educational program. At institutions offering several programs outside the Office of the Chancellor domain the director of studies or other staff member in equivalent position has completed the questionnaire. The instruction letter that accompanied the questionnaire form made it clear that the form was to be completed by one person. We did not search for collective opinions within the various organizations.

1.2 Processing

The responses have been processed in the following manner.

All responses were organized according to faculty, and institutions outside the Office of the Chancellor domain were treated as one faculty. The faculty of law and theology were grouped together, as were the faculties of medicine and dentistry.

Responses to questions 3—3.3 and 4—4.3 were organized in "classes" in a two-step operation; the second step was to reduce the number of response categories by combining similar but not identical responses to one "class" or category.

When classifying the responses and naming the response categories, we have tried to avoid all personal interpretations of the answers as far as possible and to adhere strictly to what was literally stated in each response.

In our classification, one response may have been referred to more than one category. For instance, a change may have affected both goal definition and extent of small group activities. In such a case, the response has been noted under two different categories. This will explain variations in the totals of the tables.

2 Results

2.1 Response frequency and reported changes*

The response frequency is surprisingly low for social science faculty (University of Stockholm) but otherwise satisfactory, with an average of over 80 %.

In most cases, three changes have been reported as per instructions (table 2). It is remarkable, however, that almost half of the responses from the faculties of medicine and dentistry report only one change. The first question that arises is naturally whether this one reported change has been so comprehensive that there has been no need to report partial changes. This is not the case. Instead, it seems to be a question of a low degree of innovativeness in these programs, and this impression has been reinforced by the nature of the changes that have been reported.[1]

It is also interesting to note that seven humanities departments have reported 0–2 changes. Six of these responses have come from minor subject areas where both pressure and resources for change often seem to be minimal. The following comment was made in the seventh response: "In subject X, no changes have occurred that are worth mentioning, because committee X has done the thinking for us, centrally. Nothing can be more fatal for initiative and desire for experimentation than gigantic central committees with representatives for the National Board of Education, teacher colleges, student unions, and God knows what." (The identifications have been removed by us.)

2.2 The nature of the changes

Our classification of the nature of accomplished changes (table 3) tells us not much more than that the changes differ widely from each other, a fact that is hardly surprising. The largest single category is an increase of course offerings, and even that does not account for more than approximately 15 % of the reported changes.

If the categories are grouped into mainly "exterior"–i.e. quantitative and technological–changes (categories 2, 7, 8, and 11) and mainly "interior" changes such as contents, methods, and examinations (categories 1, 3, 4, 5, 6, 9, and 10), the former group accounts for slightly less than 40 % and the latter for about 50 % of all reported changes.

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* The responses are summarized in tables 1–12 (Chapter 3).

[1] It should be noted that the investigation includes only one faculty of each type. Thus, possible differences between educational institutions of the same kind cannot be established.

In regard to differences between faculty areas, it can be noticed that the faculties of natural sciences and of humanities report a great number of new courses. Among those educational institutions not in the Office of the Chancellor domain, many responses indicate internship programs and similar innovations.

It is even more difficult to distinguish a pattern for the *nature of desired changes* (table 4); the desires for change are spread over a wide field. There is one noticeable difference between reported (table 3) and desired (table 4) changes: the former are specific and concrete, while the latter frequently refer to broad directions of change. This difference is natural; innovations are not worked out in detail and kept on ice until they can be implemented.

2.3 Major causes of change

Among the *main causes of accomplished changes*, two major general categories emerged (table 5). One can be characterized as an internally manifested need of improvement, increased efficiency, and adjustment; it accounts for approximately 25 % of the reported changes. The other major general category refers to external factors and to the policies of governing authorities. This category includes some 15 % of the responses and is most frequently found among replies from institutions not included in the Office of the Chancellor domain.

In addition, technological faculty reports unsatisfactory aptitude or results within the student group as a common cause of change, while humanistic faculty reports changes in the resource situation as being of major significance.

The same two main categories—general internal needs and external requirements—are noticeable among the *major causes of desired changes* (table 6). As was the case in regard to the nature of desired changes, the causes are more generally formulated than for accomplished changes.

2.4 Facilitating and hindering factors

The most frequently mentioned *factor to have facilitated the accomplished changes* is the contribution and cooperation of teachers and/or students (table 7). Approximately 30 % of the responses refer to such personal involvement. Support and stimulation from educational development work accounts for slightly over 6 %, and external support or actions by authorities for slightly over 10 % (combined). So called temporary systems (project groups, conferences, etc.) are frequently recommended in change strategies; about 6 % of the responses refer to such temporary systems.

Involvement by teachers and/or students accounts for approximately 18 % of the major *factors that would facilitate desired changes* (table 8). Most responses indicate increased funding or other changes in the resource situation (around 25 %). Support from authorities accounts for 14 % and educational development activities for approximately 7 %. If all responses are combined where superior authorities are mentioned as potential change facilitators, the percentage of these combined responses would rise to over 50 %.

Among major *factors that have hindered accomplished changes* (table 9), lack of financial resources is most frequently mentioned (22 %), followed by the system of regulations (16 %). In third place, with approximately 11 % of the responses, is a grouping of such factors as teacher conservatism, inertia, tradition, etc.

Some 30 % of the responses have cited lack of financial resources as a *factor that would hinder desired changes* (table 10). Regulatory systems and bureaucracy are mentioned in approximately 13 % and teacher conservatism and inertia in 11 % of the responses.

2.5 Initiatives and educational development support

More than half of the accomplished changes were initiated by the responding department itself. This holds true for all faculties. In some faculties up to 80 % of the changes were initiated in this manner. There is a clear difference between institutions within and outside the Office of the Chancellor domain; in the territory of the Office of the Chancellor, a central authority had initiated 17 % of the changes as compared to over 40 % for other institutions.

In about 25 % of the cases, there has been some form of local or central educational development support, but there is a marked difference between the disciplinary fields: the figure reaches some 75 % in social sciences, but only one out of 23 changes in the faculty of medicine and dentistry had received such support. Due to the nature of our material, no definite conclusions should be drawn from the significant differences that can be seen in table 12, but these differences do indicate a need for further investigation.

2.6 Final comments

The questionnaire covered accomplished changes over a time period of three years. Each questionnaire form was completed by one person, namely the director of studies or a staff member in comparable position. It must be kept in mind that these two circumstances—the short span of time and the limited group of persons—severely restrict the usefulness of our questionnaire as a mapping of the change situation in higher education. However, the investigation would have been too extensive for us to complete if the number of individual respondents at each responding unit had been increased—which would be of interest for defining the variations in the perceptions of change. The reason for limiting the time to three years was that for many of the individual respondents, it might have been impossible to review a much longer period of time.

The investigation demonstrates that there are continuous changes of many different kinds within the higher education system. It also points to some differences between various educational areas. According to the responses, teachers and students are important driving forces for change, while authorities and their actions or lack of action more frequently appear as hindrances than as help. Naturally, the responses are influenced by the system positions of the respondents: criticism of authorities and their actions is common among teachers and researchers in the higher education system. (Our guess is that this might be more typical of the educational field than of other administrative areas.)

It is possible that the image of change within different areas might have been partially different if we had directed our questionnaire to department chairman, other teachers in general, graduate students, directors of education and other local administrators, or to staff members at the Office of the Chancellor.

The value of investigations of this type is limited, and the value of our study would have been limited even if we had been able to improve the method and

technology of our investigation, or if we had had the resources to make it more extensive.

On the other hand, investigations of this kind may be defended on grounds that they can form the basis for further studies. By selecting certain changes and certain departments for intensive study with various methodological approaches, it would be possible to increase knowledge of the change situation and conditions for the development of change in higher education. It is our hope that we will have the opportunity to participate in continued investigations with these ambitions.

3 Tables

Table 1. Frequency of responses

	Number of qustionnaires distributed	Number of responses received	Frequency of responses (%)
Outside the Office of the Chancellor	14	13	93
Faculties of			
medicine/dentistry	12	11	92
technology	20	15	75
natural sciences	16	16	100
humanities	22	18	82
social sciences	14	7	50
theology/law	2	2	100
Total	100	82	82

Table 2. Number of accomplished changes

Number	4	3	2	1	0
Outside the Office of the Chancellor		12		1	
Faculty of					
medicine/denistry		6		5	
technology	2	10	1	2	
natural sciences	1	12	1	1	1
humanities		11	3	1	3
social sciences		7			
theology/law		1	1		
Total	3	59	6	10	4
%	3.7	72.1	7.3	12.2	4.9

Table 3. Nature of changes

	1	2	3	4	5	6	7	8	9	10	11	12
Outside the Office of the Chancellor	3	–	2	1	13	3	3	2	3	3	1	5
Faculty of												
medicine/dentistry	2	2	1	3	3	3	4	4	–	1	–	3
technology	5	8	2	5	5	6	4	2	3	–	10	1
natural sciences	5	3	4	6	2	3	6	11	3	1	1	7
humanities	4	3	1	2	1	1	6	17	–	1	4	5
social sciences	5	–	5	3	2	3	2	4	2	3	–	–
theology/law	–	1	–	–	1	2	–	–	–	–	–	1
Total	24	17	15	20	27	21	25	40	11	9	16	22
%	9.7	6.9	6.1	8.1	10.9	8.5	10.1	16.2	4.5	3.7	6.4	8.9

1 Change of content emphasis
2 Instructional materials
3 Examinations, grading system
4 Increased small group activities
5 More practical orientation, applications, contacts with labor market, introduction or changes of internship programs
6 Activation of students, directed self-study, independent work
7 Organizational changes in courses or educational programs
8 Increased course offerings
9 Project/problem orientation
10 Integration of studies
11 Differentiation, supportive instruction and reviews, lower requirements
12 Other changes

Table 4. Nature of desired changes

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Outside the Office of the Chancellor	2	4	5	1	3	3	11	6	3	1	–	3	2	6
Faculty of														
medicine/dentistry	–	–	3	1	2	–	5	–	–	1	–	2	–	1
technology	–	2	3	4	1	1	6	–	2	4	5	3	4	1
natural sciences	1	–	7	2	4	3	4	5	5	4	3	4	3	6
humanities	3	–	1	–	1	3	3	7	1	9	1	1	6	4
social sciences	–	–	1	1	4	2	1	–	1	–	2	4	2	2
theology/law	–	–	–	–	–	–	–	–	1	–	–	–	1	1
Total	6	6	20	9	15	12	30	18	13	19	11	17	18	21
%	2.8	2.8	9.3	4.2	7.0	5.6	13.9	8.4	6.0	8.8	5.1	7.9	8.4	9.8

1 Increased international exchange
2 Increased external and internal cooperation; more instructors from outside the institution
3 Increased practical applications
4 Increase of inter-disciplinary/generalized content
5 Other content changes, e.g. in-depth or expanded studies, increased research contacts
6 New courses, new educational programs
7 Other organizational changes in education
8 Changes in planning and administration, e.g. service structure for teaching staff, increased administrative resources, more flexbility
9 Staff development programs in pedagogy/methodology
10 Instrucitonal materials
11 More problem/project orientation
12 More small group instruction
13 Other pedagogical/methodolgical changes, e.g. change of examination format, differentiation, supportive instruction and reviews, activation of students
14 Other changes

Table 5. Major causes of accomplished changes

	1	2	3	4	5	6	7	8	9	10	11
Outside the Office of the Chancellor	11	17	3	4	1	5	3	4	1	–	4
Faculty of											
medicine/dentistry	12	2	1	–	1	1	1	1	–	–	3
technology	11	7	6	3	13	8	4	1	4	–	1
natural sciences	10	8	2	5	4	2	4	2	7	4	1
humanities	8	4	–	5	3	7	–	2	12	8	–
social sciences	10	5	3	3	–	2	5	2	–	–	–
theology/law	1	2	1	–	1	–	2	–	–	–	1
Total	63	45	16	20	23	25	19	12	24	12	10
%	23.4	16.7	5.9	7.4	8.6	9.3	7.1	4.5	8.9	4.5	3.7

1 Need of increased integration or adjustment between components of the program of study; increased efficiency; needs recognized in current program of study
2 External factors, decisions, investigation by superordinate authority
3 Attempt to improve motivation of students
4 Teacher requests
5 Unsatisfactory study results; lack of sufficient background knowledge
6 Requests/influences from students
7 Change in goal priorities
8 Impulses from pedagogical debate; investigative work, etc.
9 Additional resources; lack of resources; decreased enrollment
10 Adjustment to new or different student categories

Table 6. Major causes of desired changes

	1	2	3	4	5	6	7
Outside the Office of the Chancellor	6	–	17	4	–	11	4
Faculty of							
medicine/dentistry	–	–	3	7	2	5	1
technology	9	1	9	4	1	7	2
natural sciences	8	1	17	3	2	10	5
humanities	6	–	12	5	2	10	4
social sciences	6	–	4	2	–	7	1
theology/law	–	–	–	–	2	2	–
Total	35	2	62	25	9	52	17
%	17.3	1.0	30.7	12.4	4.5	25.7	8.4

1 External requirments; signals from superordinate authority
2 Impulses from pedagogical debate
3 Increased efficiency; improve goal accomplishment
4 Other internal requirements and deficiencies
5 Student requests
6 Other internal wishes, e.g. increades pedagogical involvement; teacher requests; student activation; increased teacher/student contacts
7 Other

Table 7. Major factors that facilitated implementation of accomplished changes

	1	2	3	4	5	6	7	8	9	10	11
Outside the Office of the Chancellor	1	1	7	1	9	2	3	8	6	1	5
Faculty of											
medicine/dentistry	–	–	1	2	–	–	3	2	–	–	3
technology	2	3	4	8	11	2	–	6	2	3	2
natural sciences	2	–	6	10	9	–	6	8	4	8	–
humanities	3	5	4	3	8	3	2	5	5	6	–
social sciences	7	–	3	–	4	6	1	5	–	2	–
theology/law	–	–	3	1	1	–	–	–	–	–	–
Total	15	9	28	26	42	13	15	34	17	20	10
%	6.5	3.9	12.2	11.4	18.3	5.7	6.6	14.8	7.4	8.7	4.4

1 Support or stimulation from educational development work
2 External support; contacts with professional life
3 Student influence; student involvement; cooperation between teachers and students
4 Change in the resource situation
5 Teacher involvement; individual efforts by teachers
6 Project or planning work; task forces; conferences
7 Interdepartmental cooperation
8 Insights concerning deficiencies and needs; previous favorable experiences; change in the value system; personnel changes
9 Support, stimulation, or decision from superordinate authority
10 Conconance
11 Possibilities to act independently

Table 8. Major factors that would facilitate desired changes

	1	2	3	4	5	6	7	8	9	10
Outside the Office of the Chancellor	9	6	5	4	3	2	7	9	–	5
Faculty of										
medicine/dentistry	1	3	–	1	–	–	6	–	–	1
technology	10	1	6	6	1	1	4	2	1	6
natural sciences	11	2	7	6	1	2	11	1	1	9
humanities	15	5	1	2	1	4	1	1	5	6
social sciences	6	1	–	1	2	4	1	–	1	3
theology/law	–	–	–	–	–	2	–	–	–	–
Total	52	18	19	20	8	15	30	13	8	30
%	24.4	8.4	8.9	9.4	3.8	7.0	14.1	6.1	3.8	14.1

1 Additional funding or other change in the resource situation
2 Deregulation, decentralization
3 Influence and involvement of students
4 Teacher involvement, interest, knowledge
5 Interdepartmental cooperation
6 Support or stimulation from educational development work
7 Support, stimulation, or decision from superordinate authorities
8 Planning/project work
9 Change in service structure for teaching staff
10 Other

Table 9. Major factors that have hindered accomplished changes

	1	2	3	4	5	6	7	8	9	10
Outside the Office of the chancellor	4	8	1	8	2	1	–	2	4	5
Faculty of										
medicine/dentistry	–	–	1	3	2	–	–	–	2	5
technology	4	3	2	2	2	3	6	1	1	3
natural sciences	6	8	3	9	–	1	4	5	1	5
humnaities	–	5	5	11	–	9	1	2	–	5
social sciences	6	5	3	8	–	–	3	1	1	1
theology/law	–	–	–	–	–	–	–	–	–	–
Total	20	29	15	41	6	14	14	11	9	24
%	10.9	15.8	8.2	22.4	3.3	7.7	7.7	6.0	4.9	13.1

1 Teacher conservatism; inertia; tradiiton
2 Regulation system
3 Lack of time; work load; working hours
4 Lack of financial resources
5 Lack of teacher resources
6 Lack of instructional material and equipment
7 Territorial thinking; lack of consonance
8 Superordinate authority
9 Student resistance
10 Other

Table 10. Major factors that could hinder desired changes

	1	2	3	4	5	6	7	8	9
Outside the Office of the Chancellor	5	5	4	–	10	1	–	3	5
Faculty of									
medicine/dentistry	2	–	–	2	4	6	6	–	1
technology	1	3	6	5	13	3	4	1	2
natural sciences	3	8	7	3	12	6	4	2	4
humanities	1	8	2	–	11	4	2	1	2
social sciences	–	2	3	2	8	1	2	3	2
theology/law	–	–	–	2	–	–	–	–	–
Total	12	26	22	14	58	21	18	10	16
%	6.1	13.2	11.2	7.1	29.4	10.7	9.1	5.1	8.1

1 Decisions by superordinate authority
2 Regualtion system; bureaucracy; centralization
3 Teacher conservatism; inertia
4 Lack of time; work load
5 Lack of financial resources
6 Lack of teachers
6 Lack of teachers
7 Territorial thinking; lack of consonance
8 Student resistance; unqualified students; lack of student interest
9 Other

Table 11. Major initiators of change

	Responding department		Other local body		Central authority		Other source		Total	
		%		%		%		%		%
Outside the Office of the Chancellor	20	53.0	2	5.3	16	42.1	–	–	38	100
Faculty of										
medicine/dentistry	17	77.3	1	4.5	3	13.6	1	4.5	22	100
technology	32	62.5	8	15.7	4	7.8	7	13.8	51	100
natural sciences	32	68.1	2	4.3	8	17.0	5	10.6	47	100
humanities	33	70.2	6	12.8	7	14.9	1	2.1	47	100
social sciences	15	83.3	2	11.1	1	5.6	–	–	18	100
theology/law	5	83.3	1	16.7	–	–	–	–	6	100
	154	67.2	22	9.6	39	17.0	14	6.1	229	100

Table 12. Was financial support received from the central (within the Office of the Chancellor) educational development unit?

	No	Yes		Accomphised Changes	
		Local[2]	Central[2]	Total	% receiving educational development support in some form
Outside the Office of the Chancellor[1]	–	–	–	–	–
Faculty of					
medicine/dentistry	22	1	0	23	4.3
technology	38	3	1	42	9.5
natural sciences	35	5	3	43	18.6
humanties	26	14	0	40	35.0
social sciences	5	11	5	21	76.2
theology/law	3	1	1	5	40.0
				Average	25.9

[1] For obvious reasons, no responses were received from this group

[2] In certain cases, support has been received from both central and lockal development unit

Appendix

OFFICE OF THE CHANCELLOR
OF THE SWEDISH UNIVERSITIES
The Function Study

Appendix 1

Questionnaire regarding educational changes

1. The responses refer to (indicate department or subject, or, if possible, educational program or educational institution)

2. The questionnaire has been completed by (indicate name and position)

3. Indicate and briefly describe three particularly important changes in content or structure of education that have been implemented during the past three years.

   a)

   b)

   c)

3.1 What were the major causes of these changes?

   For a)

   For b)

   For c)

3.2 What major factors facilitated the implementation of the changes?

   For a)

   For b)

   For c)

3.3 What major factors hindered the implementation of the changes?

   For a)

   For b)

   For c)

3.4 Who was the major initiator of the change?
(Check appropriate box; comment)

	Responding department (educational program, etc)	Other local body	Central (i.e. national) authority	Other (identify)
For a)	☐	☐	☐	☐
For b)	☐	☐	☐	☐
For c)	☐	☐	☐	☐

3.5 Did you receive support from the Office of the Chancellor or from a local educational development unit (indicate the nature of support, e.g. project funding, consultation, evaluation; indicate whether the Office of the Chancellor or local educational development unit)?

For a)

For b)

For c)

4. Indicate three particularly important changes that you would like to see implemented in educational content or structure.

a)

b)

c)

4.1 What are the major reasons why these changes should be implemented?

For a)

For b)

For c)

4.2 Which major factors would facilitate the implementation?

For a)

For b)

For c)

4.3 Which major factors would make implementation more difficult?

For a)

For b)

For c)

5. Comments

The completed form should be returned before December 20, 1975 to

Bertil Östergren
UKÄ
Box 16334
103 26 Stockholm 16.

OFFICE OF THE CHANCELLOR
OF THE SWEDISH UNIVERSITIES
The Function Study

1975-12-01

Appendix 2

TO THE DIRECTOR OF EDUCATION OR ASSISTANT DIRECTOR OF EDUCATION

Questionnaire regarding educational changes

We can hear your sigh: "Another questionnaire to complete... what good is it?"

We believe, for the following reasons, that this questionnaire fulfills a useful purpose.

Within the Office of the Chancellor, we are conducting a function study on local and regional educational planning. We are interested in innovations and innovation processes in education and need to know more for the preparation of our final report. This questionnaire, which is being sent to selected subjects, is part of our investigation.

When planning for higher education, it is important to build upon what is actually happening in the field. It is also important to consider those changes that people in the field perceive as desirable. This is why we hope that you will take the time to complete the enclosed questionnaire and thus contribute to giving us a realistic basis for our final report.

Here are some brief instructions for completing the form:

1. The response should indicate the opinion of one person. The questionnaire should be completed by the director of education or his/her assistant.

2. Answer as briefly as possible. Use telegram style if you wish.

3. Return the completed questionnaire before December 20, 1975.

We thank you sincerely for your cooperation.

Cordially yours,

Bertil Östergren

Barbro Berg

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